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An Address
ON
THE UNIVERSITY'S FUNCTION IN MEDICINE*

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I APPRECIATE the honour you have done me in asking me to speak on this occasion and on the suggested topic. I assume the reason is that your secretary was aware of the fact that I have just recently come through the experience of developing a university medical school, and knowing that I held very definite views on the suggested topic desired to give me an opportunity of expressing them to the conference.

In order to give point to my remarks it is necessary that we take a brief survey of the history of medical education, as our present position can only be understood in the light of history.

It is no reflection upon medical science to say that like almost every other science or combination of sciences it had its beginning in the mystic-magic period of human history. It is perhaps not easy for us to realize to-day that just as the modern chemist is the natural successor of the old alchemist, the modern doctor of divinity, of the priesthood of the ancient world, so the modern doctor of medicine is the natural successor of the ancient medicine man with his magic and his charms. Modern science has taught us in this age to see things and events in their logical sequence, but we should not forget that in an age when men sincerely believed in demoniacal possession and saw the acts of nature only as isolated acts and not as part of a great whole, many things were done with great sincerity which now seem utterly foolish and without reason. I believe that to-day in some of the so-called "therapies" being foisted upon the public of North America and for which legislative sanction is being sought and granted, there is more conscious insincerity and hypocrisy than at any time in the history of the world. The truth is that most of our impatience with the practice and beliefs of the past ages is due to our inability to visualize a world in which men were wholly or almost wholly unscientific. To illustrate my meaning let me recall to you the case of Kepler, one of the greatest astronomical observers of the middle ages. He spent almost a life time making observations of the planet Mars; he had mapped out its path in the heavens and the form of the orbit in which it moved. He was so impressed with the beauty and symmetry of its motion that he expressed his belief that it must be guided by an angel. It did not occur to him that there was some universal law at work.

But to return. Out of what we might call the magic-mystic period medicine emerged with a body of esoteric doctrine, some of which was based on experience, some on the remains of ancient magic and a good deal of it resting on the mere statements of men whose names were remembered, and to whom tradition attached value because of special doctrines they had promulgated. In an unscientific world the authority of such men was at the same moment the

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strength and weakness of medicine. As there was really no body of scientific knowledge on which to base action, the authority of successful practitioners was the best that could be obtained. The weakness lay in the fact that such traditional authority could be and was used against the progress of knowledge. The position of authority which Galen held for approximately a thousand years is a good example of what I have said. To a very large extent those elements of medical training which are sometimes spoken of as the art of medicine are the natural sequence of this tradition. I shall say a word later on the art of medicine.

Modern medicine I think may be said to have begun when Vesalius in defiance of ancient authority and religious scruples had the courage to dissect the human body and to show that it was not the sort of thing that ancient authority said it was. One great new fact was sufficient to undermine the whole structure of ancient medicine. The new structure was not built in a day or a year. That was the work of generations of teachers and scholars. But authority once challenged successfully could never again wholly close the door to investigation and research. Ancient tradition and dogmas based on authority henceforth were compelled to stand the test of exact science.

Now with such an origin there was necessarily associated with the centres of medical training a body of esoteric knowledge or so-called knowledge to which medical teachers and the profession generally held tenaciously. The schools of the middle ages and even as late as the nineteenth century had in them this undercurrent of traditional belief.

The story of the struggle lasting for centuries and even down to our own day, between the men who caught the vision of a science of medicine based on research and exact knowledge, and those who so held to tradition resisting all change is a glorious, if sad one. No literary romance equals it in human interest and dramatic power. It was a grim struggle of a few great souls, whose direct contact with nature had opened before them a new world of thought and experience, against the ignorant opinion based on authority and tradition of the vast majority of the men of their day, and especially those of the great profession to which they belonged. The tragedy of it all is seen in the fact that the names we glorify to-day are in the main those who in their own generation suffered all but martyrdom for their efforts to free human knowledge from the trammels of tradition. As modern science was only in its beginning, and as there was no body of correlated knowledge from which to draw, it was wholly natural that medical schools would continue to be esoteric and traditional even down to modern times.

The real struggle for modern medicine began when biology, physics and chemistry invaded the domain of medical instruction and demanded a place with anatomy and physiology. Even as late as the nineteenth century it was not deemed fitting that anyone but a medical man should teach even physics and chemistry to medical students, so sensitive were the professors of the old tradition. I could give you a number ,of illustrations of this fact, but one or two will suffice. When President Elliot undertook the re-organization of the Harvard Medical School he was met with stern opposition by the medical profession. The objection might be expressed in a question—"What does a professor of chemistry know of the requirements of a medical school?" You will recall the fierce opposition of many of the scientific men of France and especially of the medical profession at first to the work of Pasteur. This opposition was voiced in almost identical language. "How is it possible that a chemist can know anything about human diseases?" Even as late as the foundation of our little medical school in Alberta I was forced to face in my small way the same question. In none of these cases was a clear view taken of the relation of modern science in all its ramifications to medical study. So long as the profession focused its attention on the practice of medicine, as distinguished from the preparation for the practice of medicine, this state of mind was bound to exist. In very recent years we have seen a renewal of this attitude in Canada in the demand by a certain section of the profession that the control of medical education be taken out of the hands of the teaching bodies, and placed under the control of the profession at large.

But to return to my main subject. The function of the university in medical education became apparent the moment it was recognized that the chemist, the physicist and the biologist must enter the field of medical instruction along

with the anatomist and physiologist, as men of science and not merely as medical men. Then the university becomes a necessity, and not only a necessity but a first necessity, for only in it are these great sciences taught in their fundamental relations. Perhaps the matter might better be stated thus—the university medical school became necessary just as soon as it became clear that biology, physics and chemistry are fundamental in the understanding and treatment of disease; that anatomy, physiology, pathology and bacteriology are but highly specialized branches of biology; that biochemistry is but the connecting link between biology and chemistry; that all science centres around the problem of life in general, and human life as its highest manifestations; that the laws of nature of which these great sciences are but the expression are immutable, and dependable, and are not subject to control by either magic or chance or mere human opinions.

In the foregoing rapid survey I have tried to sketch the logical sequence of events which gradually led up to the present position of the university in medical education. I have striven to be brief, but I hope I have said enough to make clear to you my point of view.

I propose to devote the rest of the time assigned to me in showing you the manner in which the university may and should function.

First, *the university must insist on the fundamental sciences being taught as university subjects.* By this I mean that subjects such as chemistry, physics and biology, often spoken of as premedical subjects, as well as the more strictly medical sciences, anatomy, physiology, biochemistry, etc., should be taught with sufficient intensity to make the student realize that they are not incidental to, but fundamental to a proper medical course.

This can be done only if certain things are definitely insisted on. I will mention just a few:

1. That these subjects are not taught by men to whom the work is merely incidental to other tasks. The instruction should be in the hands of full-time men who are masters of the subject they teach. There is no other way possible by which students can be given a proper understanding of, and a due respect for, scientific study. My memory goes back to the day when physics and chemistry and biology were regarded by medical students as a joke. They were taught by men whose knowledge was just sufficient to carry them through the work of the day. To fail in such subjects was regarded as a hardship, not only by the student himself, but by the clinical members of the staff as well. I recall an instance in one university with which I was connected when zoology was first made a full time subject. The professor was almost openly denounced by the senior members of the faculty because over one-third of the class had failed. This condition of affairs, I know, has largely passed away but the tradition of it still lingers in some of our best medical schools.

2. That the courses of study required in these fundamental subjects shall be long and continuous courses covering a sufficient range of material to afford a firm basis for scientific knowledge. The vast majority of students come to our universities—and the statement is equally true of medical students—without the slightest inkling of the broader outlook of science. The ignorance of many of our college graduates of the true bearing of science on life is evidence that many leave our universities as ignorant as they came. If this were not so, many of the quackeries of to-day would die a natural death. It is the duty of the university to insist that the men who are going out into the world to make a great science their profession shall be sound in the fundamental conceptions and bearing of science on their work.

There is a sense in which medicine may be regarded as a practical synthesis of the sciences in regard to life. She draws from every science. We must see that those who practise that great profession at least have enough scientific knowledge to give them a measure of their own ignorance. This can be accomplished only by hard and strenuous work in lecture room and laboratory under the direction of competent authority. I know of nothing so subversive of the development of the scientific spirit as to have great subjects taught by incompetent men and in a haphazard manner.

3. That the standard of examinations must be university standards, not special ones designed to help out the members of a special faculty.

If we depart for one moment from the foregoing ideas with respect to teaching and examinations, we can offer no criticism of the follies connected with the many quackeries from which

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the ignorant and thoughtless are suffering to-day.

Second, *the university should also function in determining the type of men allowed to enter* the profession of medicine. Now I know I am touching on a dangerous and difficult subject.

I will begin by saying something that all present will at once admit to be true; *viz.*, that the proper practice of medicine and surgery demands qualities mental, moral and emotional of the very highest order. No other profession makes such demands. The correlation of facts with regard to disease, the astuteness of judgment necessary for the proper interpretation of facts, the intellectual skill required to guide in treatment of disease, coupled with a co-ordinated skill of the hand in surgery, all presuppose the possession of a brain highly trained and skilfully attuned to its task. Of equal importance are the moral qualities. Of no other class of men is a higher moral purpose demanded. There must be that honesty and sincerity of purpose which attunes the mind to the habit of quick and accurate discrimination of what to do and what not to do, avoiding, under trying circumstances, both errors of judgment and moral delinquency. These qualities of manhood are first essentials. Now, judged by such standards, I do not hesitate to say that there are hundreds of men in the practice of medicine on this continent who should never have been permitted to enter the profession. When you ask me how we could have prevented them, I answer at once that you are asking a very difficult question. Intellectual standards we can fix. I am confident that if the universities had a clear and well defined judgment with respect to the necessary intellectual standards, both for entrance into medicine and for study during the course, and were influenced only by these considerations, a great deal of that which constitutes a reflection on us would have been avoided. The truth is we have allowed other considerations to bias our judgment. For example, I have heard men say, "He is a good fellow and will do good work," adding, "Remember that there is an art in medicine, as well as a science." Now, I am not going to say a word against medicine as an art, except that it is the traditional inheritance in medicine. To have a proper approach to patients or, as some of the older physicians used to say, a "good bedside manner" is a desirable thing, providing it is not made a substitute for knowledge. When it is made such a substitute, the man who so justifies himself is either wholly ignorant or a faker. You cannot substitute a fine "bedside manner" for a proper blood count or a microscopic diagnosis of bacteria. The university can insist that men shall know, and mercilessly eliminate those who do not reach the proper standard. It is useless to plead good intent or ignorance when you have violated a law of nature. If the violation is serious enough, nature eliminates you. If we were absolutely strict in the matter of intellectual standards, I am sure half our task with respect to the quality of men we train would disappear.

There is another temptation which I hesitate to mention to which the older medical schools were subjected, but to which no university could possibly respond. The constant demand for money made numbers and fees things of moment. I recently heard of a medical school which was so overcrowded with students that good work was impossible. A governing board made up mostly of laymen stated that they could not afford to limit numbers as they needed the fees. No institution worthy of the name can afford to take such a stand. In that statement you have the excuse for all the schools of fake medicine of this and every country. The university which finds itself in that condition should give public notice of its intention to close its doors rather than prostitute its work. I am sure that any institution finding itself so situated would have its courage rewarded by a prompt public response.

In the third place, the university must *function in medicine as the home of research.* I do not believe that a university faculty can remain a vital teaching body otherwise. To do this it is absolutely necessary to have a full-time staff for all departments, including, if possible, the clinical departments. It is my duty as president of a university to find the money necessary to keep a staff satisfied. This is not an easy task. For every dollar I have found to enable men to carry on their researches, I have had a threefold reward. First, the reward of seeing highly trained men get the opportunity to use their ability; second, of seeing the stimulating effect upon the staff generally of a good piece of work done by one of their number; third, and the greatest re-

ward of all, of seeing the effect upon the student body. Nothing will do so much to develop the scientific spirit among students as the fact that they are being taught by men actually doing new work. The effect of the discovery of insulin on Canadian students was enormous. I have listened with a gratification I cannot describe to expressions of pleasure and pride among the students of my own university concerning the work of Dr. Collip. To be taught by a real discoverer creates a noble enthusiasm in the minds of ambitious students. Around a real researcher a school of thought grows of necessity. I know from dearly bought experience how sterile a department may become when instructors settle down to the task of being only routine teachers. I am confident that in stimulating the research spirit in our medical faculties the universities will do more to create a public opinion in favour of the things for which they stand than in any other way. The creation of such a spirit will also act tremendously against the commercialism of our time.

But if the university is to function completely in this way the *university hospital becomes of necessity a part of the medical school.* It is here where the full-time scientist and the clinician meet and where the laboratory worker finds the fruition of his efforts. I cannot enter on a further discussion of this topic as to do so would more than use the balance of the time allotted to me, and I desire to address myself briefly to one or two other aspects of my subject. I do wish however, to suggest that in the co-ordination of the university school of medicine and the university hospital under competent clinicians and scientific researchers we have another powerful weapon against the commercial quackery which exists among us.

The university has a fourth important function to perform which it can do successfully if given an opportunity. I have mentioned medical quackery more than once. *For the rise of some of these so-called therapies the medical profession is not wholly blameless.* Had our training schools lived up to their professed standards, had the commercial spirit been kept out of them and their medical graduates been of the right caliber, these quack schools could have been fought with clean hands and clean weapons. Such, however, was not the case. *Incompetent practitioners turned out by incompetent schools open the door for all the trouble.* The university stimulating scientific study, promoting research and creating a sense of science in the minds of the public is now the ultimate remedy. No community of scientific thought can be created in any other way. *The first step must be the passing of the power of conducting examinations for the practice of medicine over to boards appointed by the university,* thus freeing the medical profession from the charge of personal motive; then the universities will be in a position to say to the legislatures that there must be common standards in scientific subjects. We are prepared to set these standards for you. Without question, that is the road we must travel and it is the road, however long it may be, to the ultimate victory of science.

One other thing the universities must do: *they must establish special standards of examination for those who are permitted to appear before the public as specialists.* The medical profession has in its hands the power of life and death as surely as the judges of the courts of our land. But the judges can sentence a man to death only after he has heard witnesses who clearly prove the guilt of murder. Yet young and inexperienced men, because they have a medical degree, are permitted by law to take the lives of hapless men and women into their hands in a manner wholly inexplicable except for the knowledge that the medical profession has established by tradition a wholly unique position for itself. Modern science however has opened the door of escape. *The time is not far distant when no major operation of any kind will be permitted in any hospital or infirmary without the consent of men who have proved to a medical faculty their special fitness.* It is clearly a university task to lead the way to make this possible. Nothing could happen that would add more to the prestige of the faculty of medicine and to the medical profession than the knowledge that this was now being done.

But I must conclude by coming back to where I started. I am not a medical man. I am just an ordinary scientist drafted somewhat against my will into a university presidency. Since I had the organization of a medical school as part of my task I studied the subject somewhat intensively. I therefore can speak without being considered professionally prejudiced. I do not hesitate to say that I regard the medical profes-

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sion as the greatest of all professions when it is practiced by a really great man, great in mind and heart. It calls for a combination of idealism and realism in dealing with life which no other profession demands. Because of its greatness, those who profess it may rise to the greatest heights or sink to the lowest depths. The modern world has given the universities no greater task than to see that henceforth only the right kind of men with the right kind of training shall enter it; to see also that the great tradition of research for the mastery of human ills is kept up. I can wish the universities no greater glory than to be equal to the task.

An Address

ON

SOME CONTRIBUTIONS TO OUR KNOWLEDGE OF DISEASES OF THE KIDNEY AND LIVER*

By Leonard G. Rowntree, M.D.

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Part I†

Recent Advances in our Knowledge of Diseases of the Kidney

THE last two decades have brought many contributions to our knowledge of the kidney and the liver, with the result that in diseases of these organs diagnosis is more accurate and treatment more effective. It is my purpose in this paper to call attention to some of the more significant advances in these fields and to the influence they are exercising on medical thought and practice.

During these years my personal observations and studies have led me to an altered conception of disease, and to greater effort for individualization in treatment. No longer am I satisfied with morphological, cellular, or even with visceral conceptions of pathology, because I am constantly impressed more and more with functional deficiency as evidenced in disease, and with its widespread and constitutional nature. Such a conception of disease must of necessity affect the therapeutic viewpoint and tend toward the adoption of treatment for the prevention and correction of perverted function, and of treatment based, when possible, on the response of the sick person to various functional and therapeutic tests.

The time at my disposal precludes the discussion of certain matters of interest, such as the newer conception of the renal structural unit, Cushny's theory of the secretion of urine, recent experimental work relating to the function of the glomerulus, and the influence of Donnan's equilibrium on ionic distribution in osmosis. Accordingly, attention will be centered on those phases of progress which have a bearing on the clinical management of cases.

Etiology.—Much remains to be learned concerning the etiology of nephritis. We now recognize the importance of influenza, focal infection, obstruction in the upper intestinal tract and in the biliary system, as well as of the factors previously accepted. Even in chronic glomerular nephritis it is difficult to determine the etiology in a large proportion of cases. It may be spontaneous, or secondary to pregnancy or some acute infection, or to exposure, as in trench nephritis. This difficulty has been emphasized by Bell, who could determine the cause only in ten of the twenty-seven cases of chronic glomerular nephritis he studied. In six of these there were old endocardial lesions, in one suppurative mastoiditis, and in one, a female,

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† Part II, Diseases of the Liver will appear in our December issue.

thrombosis of the pelvic veins. In one instance the disease followed several attacks of tonsillitis, and in another pleurisy, quinzy and phlebitis. But in the remaining seventeen cases there was no suggestion of its etiology. This is in keeping with my own experience. Bell is impressed with the rôle of the streptococcus in the production of glomerular lesions, and has succeeded in producing such lesions in monkeys through the injection of streptococci.

Theory of urinary excretion.—Urinary excretion has been a subject of great interest and of innumerable investigations throughout an entire century. Hench has prepared a diagram which suffices to recall and also to contrast the more important theories which have been advanced (Fig. 1). Cushny's conceptions certainly merit thorough consideration.

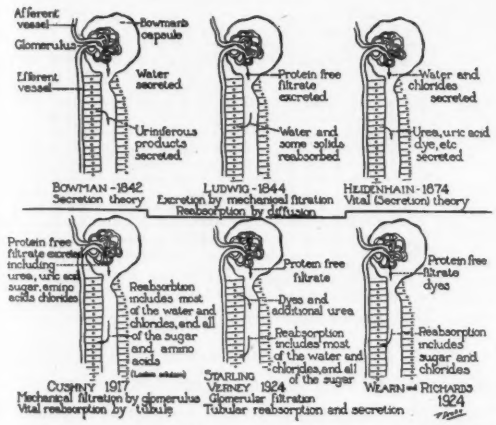
Afferent vessel
Glomerulus
Efferent vessel
Bowman's capsule
Water secreted
Urinferous products secreted
BOWMAN - 1842
Secretion theory
Protein free filtrate excreted
Water and some solids reabsorbed
LUDWIG - 1844
Excretion by mechanical filtration
Reabsorption by diffusion
Water and chlorides secreted
Urea, uric acid dye, etc secreted
HEIDENHAIN - 1874
Vital (Secretion) theory
Protein free filtrate excreted including urea, uric acid, sugar, amino acids chlorides
Reabsorbtion includes most of the water and chlorides, and all of the sugar and amino acids
CUSHNY 1917
Mechanical filtration by glomerulus
Vital reabsorption by tubule
Protein free filtrate
Dyes and additional urea
Reabsorption includes most of the water and chlorides, and all of the sugar
STARLING VERNEY 1924
Glomerular filtration
Tubular reabsorption and secretion
Protein free filtrate dyes
Reabsorption includes sugar and chlorides
WEARN and RICHARDS 1924

FIG. 1.—Schematic representation of various studies on renal physiology.

Studies of renal functional capacity.—It is now possible in the humblest home on the most distant crossroads, as well as in the modern hospital, to obtain accurate information concerning the functional capacity of the kidney; this is of crucial importance from the standpoint of diagnosis, prognosis, and treatment. By the judicious repetition of tests of renal function the progress of the disease may be followed accurately, the outcome predicted, and treatment modified to meet changing conditions. The armamentarium essentials for the clinical study of nephritis include a test-tube and acetic acid for the heat test, a microscope, blood-pressure apparatus, measuring cylinders and urinometers, a phenolsulphonephthalein outfit, an ophthalmoscope, and a urea outfit for determining the mercury combining power of blood and saliva. These tests will afford the maximal amount of information with the minimal outlay in time and expense.

The information derived from the various tests will reveal, in diagnosis, (1) whether or not the kidney is involved; (2) the nature of the disturbance, nitrogen or salt-water metabolism; (3) a picture of terminal insufficiency common to several pathologic processes, and (4) a classification of cardiorenal vascular syndromes (Volhard and Fahr).

The points of prognostic significance they reveal are, (1) the degree of renal insufficiency; (2) the course of the disease, and (3) conclusions as to the probable outcome, especially in chronic disease.

The points revealed with regard to treatment are, (1) the urgency for it; (2) the therapeutic indications as to kind and degree of treatment; (3) extent of risk in surgical cases, and (4) indications for individualization in treatment.

Since a detailed discussion of the value and significance of the functional tests is obviously impossible, an example may serve to show their clinical importance. In one of our earliest cases in which renal function was studied the patient was a child supposedly suffering from diabetes insipidus. The test of renal function yielded a small or no phenolsulphonephthalein output, and thereupon the diagnosis was changed to chronic nephritis; the prognosis, which was previously excellent, now became extremely grave, and the treatment was changed from the administration of a specific glandular product to the radical measures demanded by impending uræmia. Necropsy demonstrated the validity of the findings and the correctness of their interpretation.

Studies on the chemistry of the blood.—Changes in the composition of the blood are of great significance in the investigation of the organs of excretion. We should not lose sight of the purpose of these organs. Their function is to keep the volume and the composition of the blood constant. Deviation from these constants usually indicate disease of the excretory organs. This is as a rule reflected quantitatively, but not invariably, since the body tissues themselves may sometimes play a part, as, for instance, in œdema when the increased hydration capacity of the body tissues is an important factor. In-

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crease in non-protein nitrogen, urea, creatinin, and uric acid are all important in the study of renal function.

Besides revealing changes in nitrogenous metabolism, studies in the chemistry of the blood yield important information relative to acidosis and alkalosis and disturbances of the acid-base equilibrium of the body. The amount and ratio of various substances in the blood may also be pathognomonic as, for instance, the high urea and the high carbon dioxid carrying capacity of the plasma, and the low chlorides of the blood found in cases of high intestinal obstruction. The tabulation shows the changes in the blood encountered in one of McVicar's cases of duodenal intoxication nineteen days after gastro-enterostomy. The knowledge of this intoxication is of extreme importance, since, as a rule, it yields readily to the administration of large quantities of salt and water, given preferably intravenously if vomiting is associated.

Similarly, changes in the ratio of the lipoid and protein constituents of the blood may assume significance. Epstein, for instance, considers a high lipoid and low protein content of plasma characteristic of nephrosis.

The significance of anæmia in glomerular nephritis.—Brown and Roth have recently correlated the degree of anæmia with renal functional findings, and they have found that the ordinary percentage values of erythrocytes and hæmoglobin, in the absence of frank hæmorrhage, afford an excellent index to the degree of functional injury of the kidney in cases of chronic glomerular nephritis (Fig. 2). The extent of anæmia may therefore be of great practical significance in relation to diagnosis and prognosis, as well as to treatment. In the latter connection, it serves, of course, as the most reliable indication for transfusion.

It should be remembered that anæmia means a percentage reduction in the hæmoglobin content, or a reduction in the number of erythrocytes for each cubic millimeter of blood. These are relative or percentage changes; by the vital red method absolute values may be obtained. It is possible to determine the blood volume, which is also found to vary with the different types of nephritis. Fourteen cases of œdema, including various forms of cardiac insufficiency, diabetes, glomerular nephritis and nephrosis, were studied with extreme care, and increased volume was encountered in only two.[7] Thus it may be noted that hydræmic plethora, or "oligocythæmic hypervolæmia," is rarely encountered in œdema.

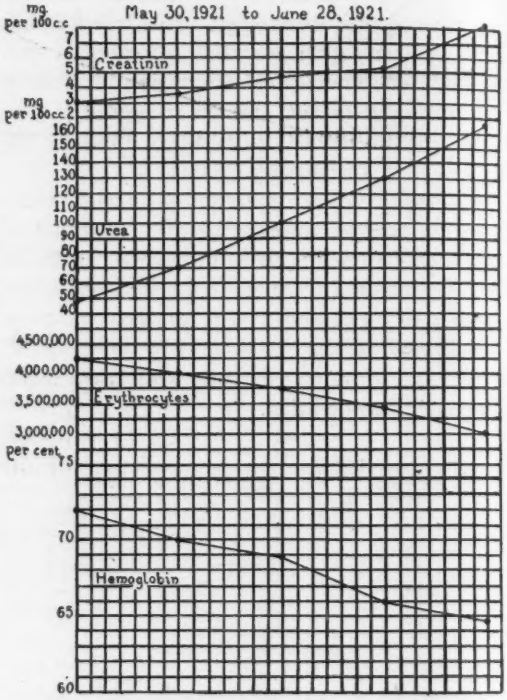

FIG. 2.—Blood findings during development of renal insufficiency. The renal injury was severe and progressive. The anæmia followed a similar course.

Changes in the vascular system.—The relation of arteriosclerosis and hypertension to disease of the kidney has long been recognized. Few of us, however, realize the importance of the ophthalmoscope in cardiorenal vascular disease, and of the still more recent microscopic studies of the capillaries of the nail-folds. The fundus of the eye, for its size, yields more pathognomonic pictures of disease than any other area of the body. Diagnostically, it is the polished surface which reveals the finger prints of disease, and prognostically, Balshazzar's wall, on which the fate of the patient too often is written. To the uninitiated, the fundus is but a picture puzzle, but to the trained clinician, it tells the story of arteriosclerosis, of hypertension, of anæmia, œdema and of toxæmia. The ophthalmologists in the clinic,[29,30,31] who have collaborated with the medical service on this problem, have recently defined and grouped these changes in such a way as to make them of the greatest value in diagnosis. To demonstrate the possi-

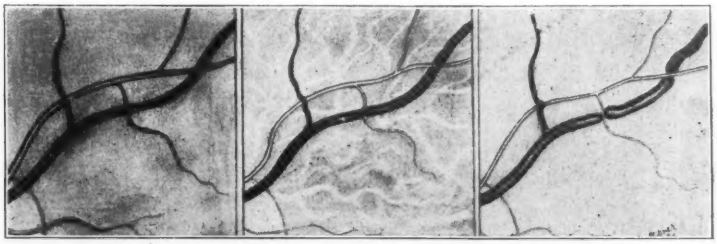

FIG. 3

NORMAL VESSELS	SENILE FIBROSIS	SIGNS OF HYPERTENSION
Caliber of artery average	Caliber of artery constricted	Caliber of artery uniformly constricted
Caliber of vein average	Caliber of vein normal or constricted	Caliber of vein normal or relatively dilated
Reflex stripe on artery moderate	Reflex stripe on artery normal or mildly exaggerated	Reflex stripe on artery uniformly exaggerated
Lumen of artery regular	Lumen of artery regular	Lumen of artery regular
Compression of vein at arterial crossing, none	Compression of vein at arterial crossing, none or mild	Compression of vein at arterial crossing, moderate
	Sclerosis of choroidal arteries often associated	

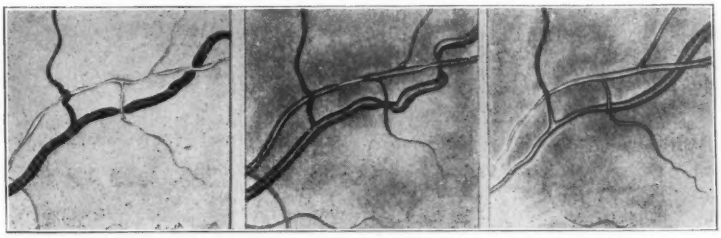

FIG. 4

ARTERIOSCLEROSIS OF HYPERTENSION TYPE	PRIMARY ARTERIOSCLEROSIS	SECONDARY ARTERIOSCLEROSIS
Caliber of artery unevenly constricted	Caliber of artery normal or mildly dilated	Caliber of artery unevenly constricted
Caliber of vein relatively dilated	Caliber of vein normal or mildly dilated	Caliber of vein unevenly constricted
Reflex stripe on artery uniformly exaggerated	Reflex stripe on artery unevenly exaggerated	Reflex stripe on artery unevenly exaggerated
Lumen of artery irregular	Lumen of artery irregular, markedly constricted at points	Lumen of artery and vein irregular
Compression of vein at arterial crossing, moderate, oblique angled	Compression of vein at arterial crossing, marked, right angled	Compression of vein at arterial crossing, none or mild
		Periarteritis and periphlebitis
		Atrophic changes in disc, retina, or choroid usually associated

FIG. 5

SPASM OF ARTERY	RETINAL ARTERIOSCLEROSIS WITH HAEMORRHAGES	RETINAL ARTERIOSCLEROSIS WITH THROMBOSIS OF VEIN
Artery normal or sclerosed	Arteriosclerosis of hypertension or primary type	Artery fibrosed or sclerosed
Vein normal	Disc normal	Compression of vein at arterial crossing
Caliber of artery constricted at point of spasm and peripheral to it	Œdema of retina, none	Proximal part of vein invisible or almost invisible
Reflex stripe on artery exaggerated at point of spasm	Exudates none	Distal part of vein engorged and cyanotic
Lumen of artery obliterated at point of spasm	Hæmorrhages, small, scattered	Massive hæmorrhage and exudation overlying and obscuring engorged vein
Peripheral branches of artery reduced to threads or invisible		Smaller hæmorrhages in regions drained by the vein and its tributaries

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bilities of differentiation of the several types of arterial and retinal vascular lesions, they have represented diagrammatically the salient diagnostic features, as shown is Figs. 3, 4, 5, 6, and 7.

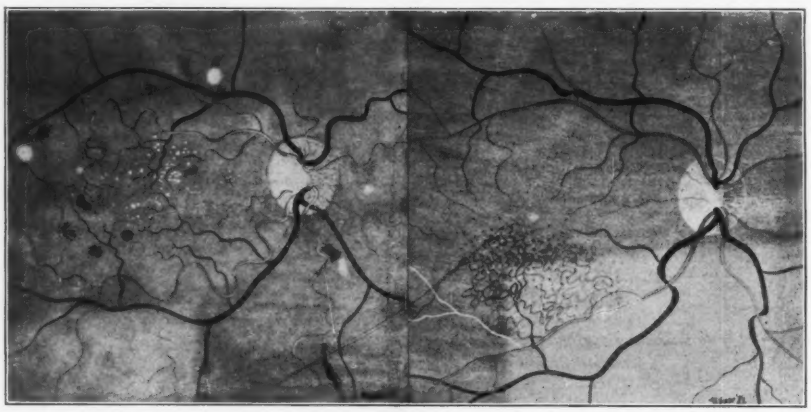

FIG. 6

RETINITIS OF BENIGN HYPERTENSION
Arteriosclerosis of hypertension type

Disc, no œdema, sometimes hyperæmia
Œdema of retina, none

Exudates, cotton-wool, scattered
Exudates, absorbing œdema, in later stages, at times
Hæmorrhages, scattered

RETINITIS OF ARTERIOSCLEROSIS
Arteriosclerosis marked, usually of primary type
Localized obliteration of arterioles or capillaries
New-formed vessels in region supplied by obliterated arteries
Disc, hyperæmia at times, no œdema
Œdema of retina, none

Exudates, punctate, localized to area of marked sclerosis
Hæmorrhages, punctate, localized to area of marked sclerosis

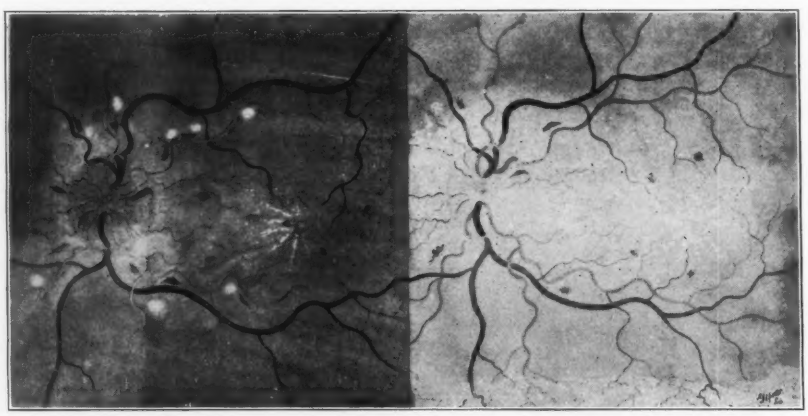

FIG. 7

RETINITIS OF MALIGNANT HYPERTENSION
Arteriosclerosis of hypertension type

Disc, relatively marked œdema and hyperæmia
Œdema of retina, peripapillary and often in macula

Exudates, cotton-wool, rather numerous
Exudates, absorbing œdema, relatively scanty, usually late
Macular star, delicate, usually incomplete
Hæmorrhages rather numerous

RETINITIS OF NEPHRITIS
Vessels normal in early stage, secondary sclerosis later
Disc, œdema and anæmia
Œdema of retina, massive, extensive, often subretinal also, at times with detachment of retina
Exudates, cotton-wool, relatively few
Exudates, absorbing œdema, rather numerous

Macular star, dense, often complete
Hæmorrhages, relatively few

The capillaries of the nail-fold also exhibit pictures, which tell the tale of disease, especially of the constitutional nature of nephritis and enlightening are the evidences of hæmorrhage, anæmia, and œdema, all of which bespeak the widespread nature of the changes in renal dis-

ease. The capillary changes are shown schematically in Fig. 8.[3,4]

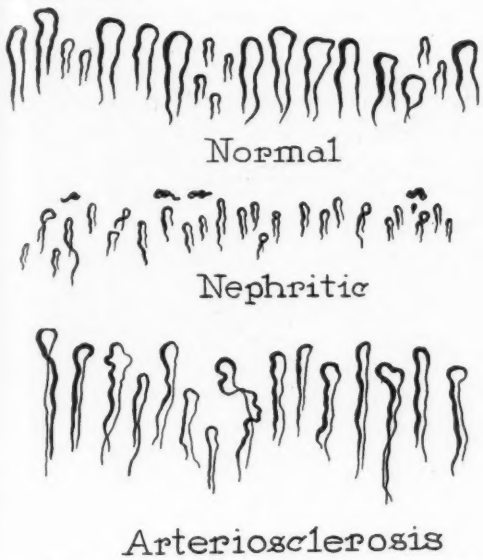

FIG. 8.—Schematic representation of the capillary changes in cases of nephritis and arteriosclerosis.

Water intoxication.—The rôle of water in pathological changes is not well understood. The possibility of water poisoning has been but recently demonstrated;[23] it has been observed in patients with diabetes insipidus under the influence of pituitrin. It has been produced by the forced administration of water in many animals, such as dogs, rabbits, cats, guinea pigs and rats. The symptoms of this toxæmia are indistinguishable from those of uræmia. It is probably due to disturbances of salt-water relationships of the central nervous system, and is prevented or cured by the timely administration of sodium chloride. A wet brain is frequently associated with uræmia, and water is unquestionably a factor in the production of many symptoms of uræmia. Convulsions and coma may result from œdema of the brain. This fact is important in the management of nephritic œdema. Convulsions may be prevented in many instances by insistence on a supine rather than a prone position.

Classification of nephritis.—As a result of newer methods of approach, clearer conceptions of cardiorenal vascular disease are evolving. It is no longer a mere "complication of diseases." To a certain extent it is now possible to disentangle this knotted skein and recognize and evaluate the rôle of the kidney, the heart, the large vessels, and the capillaries, and to estimate the extent of the arteriosclerosis and of the hypertension and toxæmia. At least, a good beginning has been made in the differentiation of these several factors. Volhard and Fahr in their recent classification indicate how far this differentiation may be carried. Their scheme is as follows:

"A. Degenerative diseases: nephrosis, of true and known etiology, with and without amyloid degeneration of the vessels:—
- I. Acute course.
- II. Chronic course.
- III. End stage: nephrotic contracted kidney without increase in blood pressure.

Sub-variety: necrotic nephrosis.

B. Inflammatory disease: nephritis.

1. Localized nephritis without increase in blood pressure.
   - (a) Localized glomerulonephritis:
     - I. Acute stage.
     - II. Chronic stage.
   - (b) (Septic-) interstitial localized nephritis.
   - (c) Embolic localized nephritis.
2. Diffuse glomerulonephritis with obligatory increase in blood pressure. Course in three stages:
   - I. Acute stage.
   - II. Chronic stage with renal insufficiency.
   - III. End stage with renal insufficiency.

   All three stages may run a course (a) Without nephrotic participation. (b) With nephrotic participation, *i.e.*, with marked and diffuse degeneration of the epithelium 'mixed form'.

C. Arteriosclerotic disease: sclerosis:
- I. Bland benign hypertonia—genuine sclerosis of the renal vessels.
- II. Combination form: genuine malignant contraction of kidney—sclerosis plus nephritis."

The work of Volhard and Fahr also serves to emphasize the widespread and constitutional nature of the changes in renal disease.

Prognosis.—Prognosis in cardiorenal vascular disease is rendered much more accurate through the use of functional tests, which indicate the extent of renal insufficiency and the proximity of uræmia. By repeating the tests it is possible

to follow the course of the disease. The phenolsulphonephthalein, blood urea, and creatinin tests, all have great prognostic significance in chronic disease. But from long experience I believe with Meyer, that the creatinin test is the most exact and reliable in forecasting a fatal outcome. Patients with a blood creatinin value of more than 10 mg. for each 100 c.c. rarely recover.

Treatment of renal disease.—There is no routine treatment for nephritis. In fact, the most striking development in its treatment is the tendency to forsake the routine for the individual treatment, or management based on the behaviour of each patient to various functional and therapeutic tests. Treatment is thereby directed toward the correction of cardiac, renal or vascular features of disease, or of toxæmia, as these are revealed by the study and observation of the patient. Foci of infection receive adequate attention, although tonsils are rarely disturbed in patients aged more than fifty.

Patients with advanced cardiorenal vascular disease in the clinic are placed in the hospital for study. Usually they are placed tentatively on the routine diet for nephritics for a few days, with 40 gm. of protein and 1500 c.c. of water daily. The nitrogen, salt and water content of the diet is adjusted according to the capacity of each patient to handle these substances. In relation to diets, it is interesting to learn that chlorine is less harmful, and that sodium is more significant in regard to water retention in œdema than was formerly supposed. Marked disturbance in the acid-base equilibrium indicates the need of acids or alkalis.

In the treatment of hypertension it is our practice to determine the response of the blood pressure to certain standardized tests such as rest in bed for three days, and the effect as seen in half-hourly readings of the administration of sodium nitrite (0.5 grain every half hour for six doses), of luminal (0.5 grain every half hour for six doses), of hypertension baths (105° F. for from five to fifteen minutes), and the effect of an injection of typhoid vaccine (Fig. 9). These tests often afford an index to the amenability of the hypertension to treatment as well as valuable information as to the nature and extent of treatment necessary. Hypertension resistant to these measures rarely responds satisfactorily even to prolonged treatment. There is evidence that the new substance isolated from the liver by James and Laughton and by MacDonald may be of therapeutic value; the experimental work holds out considerable promise, but clinical results will probably not be forthcoming until a more stable product is prepared. Radium is rarely of any great value in this condition. In associated myocardial insufficiency digitalis is still the drug *par excellence*.

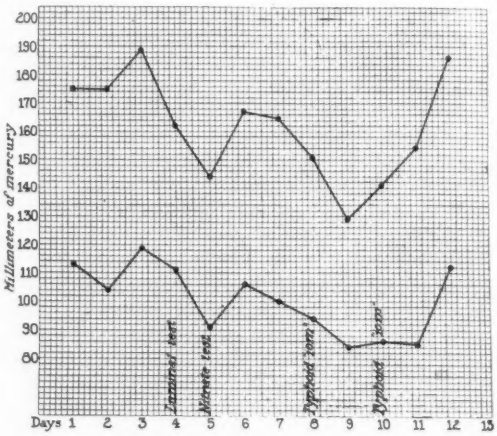

FIG. 9.—Therapeutic tests in hypertension.

In the treatment of uræmia, when the urine is of fixed low specific gravity, great significance is attached to the large intake of water. Three to six litres a day are frequently necessary. Obviously, this is only possible in the absence of œdema. If nausea and vomiting are marked, chloral, 5 grains, every four hours, often constitutes the most effective gastric sedative. If uræmia is advanced, bleeding and subsequent transfusion are carried out, while in less serious cases large quantities of 10 per cent glucose are infused.

In the treatment of œdema there is a growing appreciation of the influence of different ions on the hydration capacity of body tissues. In cases of anasarca, the fluid intake, aside from that of food, must be reduced to from 200 to 300 c.c. daily. The introduction of a new organic mercury compound, merbaphen, (novasurol), has created new interest in the management of œdema. In suitable cases, when given intravenously in doses of 2 c.c. at intervals of from three to five days, it often causes unprecedented diuresis. The clinical results are excellent, and

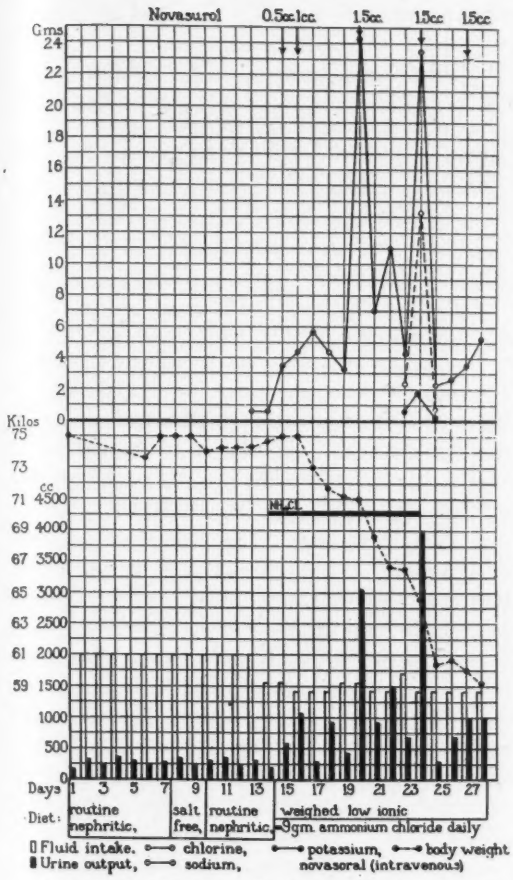

FIG. 10.—Diuresis with ammonium chloride and merbaphen.

toxic manifestations infrequent. The value of the compound in cardiac insufficiency has been adequately demonstrated. Recently Keith and his associates have stressed its value in glomerular nephritis and nephrosis, and have demonstrated that its efficiency is greater when superimposed on a regimen involving the administration of large quantities of ammonium chloride or ammonium nitrate, 8 to 10 gm. daily, and a diet low in salt and water (Fig. 10).

To one who has been keenly interested in this subject throughout two decades progress in the understanding and management of renal disease seems very definite. Certainly rational forms of treatment are available, subsequent to the study of the patient, and they are effective in a large proportion of cases.

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(A complete list will be published with Part II in next issue)

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Biologic Preparation for Study of Medicine.—Among the requisites for professional practice, Frederick C. Waite, Cleveland, places first of all, intellectual honesty, second, the ability to observe accurately, analytically and in an orderly fashion. His personal observations must be supplemented by information acquired through inquiry. Hence, the receptive senses must be carefully trained, to which must be added a critical attitude of mind and a sense of proportionate values that will enable him to evaluate evidence properly. A third requisite is the ability to solve problems. Every patient is a problem. This requires careful and accurate thinking, something that is not innate but must be acquired by careful handling of whatever subject matter is used for training. A fourth requisite must be the ability to secure information; *i.e.*, a knowledge of literature in the special field at issue. The problem of preparing an individual for a successful and useful professional career is a continuous problem from the grade school onward to entrance into professional practice. The information that is used in professional practice is almost entirely of a type that must be expounded in the courses in the professional schools; therefore the courses in the undergraduate college do not have much responsibility in presenting information to be directly used in professional practice. This responsibility must chiefly be assumed by the professional schools. Nevertheless, the teaching in the professional school must be largely built on a scaffolding of information acquired in the undergraduate college. This is a foundation and on it is built the superstructure that is of direct use in the professional career.—*Jour. Am. Med. Ass.*, August 21, 1926.

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An Address
ON
HEADACHES, WITH ESPECIAL REFERENCE TO THOSE OF OCULAR ORIGIN

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Philadelphia

HEADACHES, their cause, prevention and cure, have occupied the attention of physicians from the time of Hippocrates to the present day. Books, monographs and separate articles crowd the literature, ancient and modern, wherein they are discussed from every standpoint. They claim the consideration of all practitioners of medicine and surgery, be they general or specialized in their professional activities, and it is proper that members of medical associations should from time to time revert to this topic, exchange their observations and their experiences, and help one another in their search for causative factors, and for the explanation of the mechanism of this widespread symptom arising from manifold local and general morbid conditions. As I have been privileged recently to take part in several discussions on this subject I cannot avoid reference to, and quotations from, the papers* which were then presented, and I trust these repetitions will not be considered out of place.

Systematic writers, referring to the mechanism of headache, that is, intracranial head-pain, commonly state that it may interpret irritation or disturbance of the sensory or sensation centres of the brain, or of the nerves or nerve endings in the dura mater, or of the vaso-motor apparatus. It is usually further stated that the source of irritation may be one which acts directly by pressure, or indirectly through the agency of bloodvessels which are either in a state of contraction (vaso-motor spasm), or in a state of dilatation (vaso-motor hyperæmia), or by means of a toxin, and that for clinical purposes all headaches may be conveniently grouped into those which are in origin toxic, mechanical, or reflex, or due to a combination of these factors. For obvious reasons, which need not now be discussed, the anatomical tracings of the pain pathways, especially in relation to the trigeminal nerve distribution in the dura, although possessing certain advantages, are not satisfactory.

Recently some new thoughts in these respects have been advanced. Sir John Parsons, in his Bowman Lecture (July, 1925), after a discussion of the nociceptive sensory impulses, which he regards as "typically protopathic," and the sensory response characteristically so, states that there is "good reason to think that this conscious response is subserved anatomically by the optic thalamus," and then proceeds as follows: "I may interpolate here that I regard the pain of headache as typically protopathic and thalamic in origin." "It is noteworthy," he adds, "that no region of the cortex cerebri has been assigned to pain (Sherrington). It is probable that there is no cortical projection of these fundamentally protopathic impulses."

Last month, in the New York Academy of Medicine, Dr. Charles A. Elsberg, in his remarks on headache with special reference to the headache of intracranial disease, proclaimed a similar theory based on observation and experimental research. Recently, an address has been published wherein its author deprecates the tendency in our times to neglect an appreciation of symptoms and symptom-groups, being part of a plea for a greater regard for the art of medicine. But certainly, in so far as headaches are concerned, themselves always symptomatic, there has been no failure to classify them and to emphasize their so-called distinctive features.

Numerous efforts, also, have been made to tabulate diagnostic indications according to the seat of the pain, and many diagrams have been constructed, illustrating this method of investi-

*"Ocular headache," *Bull. New York Acad. of Med.*, 1925, second series, vol. i, No. 4, 140. "Concerning headaches with respect to their so-called distinctive features," *Virg. Med. Monthly*, December, 1925. "The house of medical interpretations," an address before the Cleveland Society of Medicine, December, 1925. (Unpublished).

gation; for instance, a marked oval area above the brow has been marked out as the site of predilection for an ocular headache, a similar larger area at the vertex for a neurasthenic headache, the temple for a dental headache, and a space at the top of the head for a nasal headache, while an occipital headache has been referred to irritation from the uterus.

The classification of headaches with relation to their supposed etiology, according to their characters or manifestations, has accordingly received much attention, and expressions such as "he has a typical eyestrain headache", "a representative gastric headache", "a marked pituitary body headache", "a pathognomonic sinus headache", etc., are constantly heard in consulting rooms, and are often recorded in case histories. Such headaches, it is assumed, have "distinctive features" from which the physician may infer the origin of the pain. Thus, a pressure-pain, band-like around the skull, with a sense of heat at the vertex, or a pain as if the skull were held in a vice, being seemingly too full, or again too empty, with or without frontal pain (the "Casque neurasthenique") of Charcot), is ascribed to neurasthenia. Or, to quote Timme, "a pain within the head, boring, bursting or throbbing, its situation being variously described as "between the eyes," or "midway between the bridge of the nose and the occiput," or "between the temples, below the crown—all lines converging to the sella turcica" is credited to pituitary malfunction. A splitting or throbbing pain, apparent soon after the patient awakes in the morning, continuing to the middle of the day, when it subsides, to recur the next morning, and in the same place unless the infection has spread to a neighbouring sinus, and sometimes associated with great mental depression, is regarded as typical of paranasal sinus disease (Ross Skillern). A headache, bursting, boring and gnawing in character, persistent for long periods of time, but subject to remarkable remissions, and associated with vomiting (it may be projectile), is attributed to intracranial neoplasms, etc. The list could easily be extended; these examples are sufficient.

Fully recognizing the clinical value of studies which pertain to sites of predilection for headpains, and the classification of symptoms which are highly significant, and which are usually denominated as "distinctive features," it must be evident that they alone cannot be trusted to reveal the etiologic and diagnostic factors, and therefore establish a proper therapeusis; this must depend upon investigations of a far different character. The physician is sure to go astray if his attention is centred only on such data for his information. Such terms as "sympathetic," "congestive," and "nervous" headaches, as Ross Skillern has well said, represent a misleading phraseology, which happily is now becoming obsolete.

It is desirable, however, to record certain clinical facts which pertain to headaches, and which, although well-known, are often forgotten or neglected, to the detriment of diagnostic effort.

1. The organ or area which, owing to disturbed function or inflammation, gives rise to headache, may itself be entirely free from pain.

2. The dysfunction of the organ or area which causes the headache may be trifling, and yet be as effective, or often more effective, as a pain-producer than in others where gross defects are present.

3. Many patients have "two or even three kinds" of headache, and not infrequently the subject is able to differentiate them; but not always, and it is the business of the doctor to make so thorough an examination that the special condition on which the relief depends shall be determined.

4. Statistical information, with reference to the comparative frequency of the various types of headache, is of academic interest only, and for obvious reasons its relative value as a diagnostic index is a small one.

5. A potential cause of headache, for example, a refractive error, may exist for a long time, until it becomes suddenly mischievous, to use Weir Mitchell's neat expression, owing to increased sensitiveness of the brain from moral, mental or physical causes.

6. The recognition, historically speaking, of the exact causes of headache has been a gradual one; partly, it would seem, because practitioners have too insistently accepted as etiologically significant such descriptive terms as have been recorded, such grouping of so-called "distinctive symptoms" as has been mentioned, and such sites of predilection as have been portrayed.

These facts are general in their applicability to the three groups of headache: toxic, mechanical, and reflex, and, as will presently appear,

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may with special emphasis be referred to those factors which are ocular in origin, and, which as I understand the matter, it is to-day my function to discuss briefly.

Although for more than two thousand years headaches have attracted the attention of physicians, it is not known who first realized that head-pain is one of the interpretations of defective refractive power in the human eye. Aetius, in the sixth century, A.D., recognized ocular distress, but could not explain it. It may be that Roger Bacon, six centuries later, after describing the properties of a convex lens and its usefulness for "the aged and those having weak eyes," noted headache as a symptom, and tied up his observation in a cipher, as was his wont. Asthenopia, or "weak sight", was evidently recognized by him and those who followed, and was dwelt upon by writers in the latter part of the 18th century and the first half of the 19th century.

The discovery of spectacles has always been a matter of dispute. It may be that the Chinese of the Mongol dynasty learned of their use from India (1260), to quote Fielding Garrison, who cites W. H. Holmes as his authority, but the suggestion of their value in the sense of the relieving quality of a convex lens, as already stated, by Roger Bacon, is established, and we like to give him that credit. In spite of the monument to his memory, the inscription on which describes Salvino d'Armato of the Armati as "the inventor of spectacles. May God forgive his sins (1317)," this credit does not belong to him.

Of course spectacles were in use during the period when asthenopia was so freely discussed, as has been mentioned, but their application to the relief of "weak sight" was far from satisfactory, not to say chaotic. It is almost amusing to read in John Stevenson's essay "On the morbid sensibility of the eye" (1815), his practical dread of spectacle adjustment and his doubts. "A gentleman of the law," he writes, "whose sight grew weak and who had constant pain, tried visual glasses and spoke with oculists, equally in vain." He warned that they (spectacles) must not possess the smallest magnifying power, the retina being incapable of enduring it. Even the great Mackenzie wrote that as asthenopes "never could employ their eyes advantageously in reading and writing, they might see sufficiently to follow the pastoral pursuits of an Australian colonist."

But sixty-five years ago all this changed, when Donders wrote, "Hypermetropia is usually at the bottom of asthenopia . . . I venture to maintain that in the pure form of asthenopia hypermetropia is scarcely ever wanting." As time went on, the term "eyestrain" came into existence, and now, although not quite to the exclusion of asthenopia, is commonly employed to interpret the varied general and local manifestations of refractive error, exterior ocular muscle imbalance, and accommodative dysfunction.

Fully recognizing the paramount importance of the work of Donders and of earlier writers—English, French and German—it is a natural matter of congratulation that the widespread influence of eyestrain was first recognized by American physicians, and our real knowledge of this matter is due, fifty-four years ago, to the genius of Weir Mitchell and the labours of William Thomson and Ezra Dyer. It constitutes a discovery, or rather, a recognition of an influence which in so far as the relief of human suffering and the sum of human happiness are concerned, deserves to rank with the best scientific announcements of the nineteenth century.

Of the varied and numerous exhibitions of eyestrain, we are, as I understand the matter, confining ourselves to one conspicuous symptom, namely, headache. I venture in this respect to give a personal experience of many years as briefly as possible, and also crave your indulgence in that I quote liberally from previous publications. The literature is replete with statistical information relating to the frequency of headache due to ocular defects. It would serve no useful purpose to review the tabulations. Suffice it to say that from thirty to sixty per cent of the cases of functional headaches are wholly, or in part, due to eyestrain in the widest acceptation of that term. Or, if one analyzes 1,000 cases with refractive errors as to the chief symptom for which relief is sought, in 60 to 70 per cent of them it will prove to be headache, while in 30 to 40 per cent of functional reflex headaches eyestrain is the etiologic factor.

Whether refractive error or muscle imbalance is the more potent factor is not determined, or, at least, differences of opinion exist. Long ago

Weir Mitchell was impressed with the influence of muscle defects, and so good an observer as Marlow believes that heterophoria is more apt to produce headache than ametropia. It is difficult to be exact in these circumstances, as the conditions are almost always in combination, and after all, it makes very little difference, as the careful investigator of the etiology of cephalalgia always takes all factors into consideration.

It is also true, however, that where this combined influence is active, the correcting spherocylindrical lenses may dissipate, for instance, frontal-situated pain, but may have no effect on pain in the occiput, for example, which may disappear when a prismatic correction is added, or the heterophoria is corrected by other measures.

While it is true that any type of refractive error may be the cause of headache, it is well known that simple myopia is least frequently concerned, while astigmatism, with or without hyperopia, most commonly is the causative agent; simple and compound myopic astigmatism hold an intermediate position.

As previously stated, the dysfunction of the ocular apparatus which causes the headache may be trifling, and yet be as effective, often more effective as a pain-producer than when gross defects are present. "Has my patient enough refractive error to account for headache?" is a common question propounded by the general practitioner, who evidently believes that the error (muscular or refractive) must be a large one to be responsible for the head-pain. But small degrees of ametropia are frequent headache-producers, more frequently, in fact, than the large errors.

Patients constantly assert "doctor, I suffer severe headaches, but it can't be my eyes, for they never pain, no matter how long I read or how insistently I use them at close ranges." This statement may readily lead the practitioner astray, who forgets that ocular headache and ocular pain are often entirely unassociated. This is an important practical observation.

Physical vigour and welfare do not necessarily exempt their possessor from ocular headache, even where the refractive error is a small one. A patient of fine physique and abundant good health, but the subject of frequent headache, may assert, "it is absurd to blame my eyes for my headaches; my sight is unusually good, and I am as strong as an ox." And yet just in such circumstances the correction of a fraction of a diopter of astigmatism may prove to be the required therapeutic measure.

On the other hand, precisely the reverse is true, and the eyestrain headache may not develop until some general failure of health takes place. This is, of course, analogous to the breaking down of resistance of an area, for example, a joint, whereby its defence is lowered, and a metastasis from a long-standing focal infection, previously inactive, finds lodgment and is followed by evil results. The clinical histories of supposed eyestrain patients should always be taken carefully, and often this relationship will be discovered; many of them with an acquired lowered resistance need treatment and management from the general as well as the ocular standpoint; combined, such treatments may be effective; uncombined, they may prove defective.

It seems worth while to stress here the importance of taking careful clinical histories of the headache patients who crowd the consulting rooms of ophthalmologists, because so often these patients have, as Mitchell was wont to say "two, or even three, kinds of headache;" otherwise the proper differentiation is not made, and constant recorrection of refractive errors is ordered, when, in fact, the cause of the uncured headache may have no concern with ocular defects.

It is often maintained that errors of refraction cause pain in the anterior portions of the cranium, and heterophorias, especially convergence-insufficiency, give rise to occipital distress. While freely admitting that convergence-insufficiency frequently causes occipital headache, I question whether the distinction can be maintained with accuracy. Of course all types of heterophoria, either alone or associated with refractive error, are headache-producers, and may have favourite areas of the cranium for their activities; for example, the one just named, or the common brow pain above the hyperphoric eye, or the temporal and temporo-parietal aches associated with esophoria. The point I would emphasize is that these are often suggestive localizations, but nothing more. Although the act of reading, or performing any sustained piece of work at close range, may cause headache in a few minutes, the pain is often delayed for long periods of time; a common

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example being the morning headache which follows the evening reading. An interesting eyestrain phenomenon is one which may be called its "cumulative action," perhaps most conspicuously manifested in the freedom from headache during the week's work, but its arrival at the end of this period, the so-called Sunday headache. Probably in minor degree, this type of headache is evident at the close of the day's labour. "My head begins to ache about four o'clock each afternoon," is a common statement.

Naturally, the incidence of ocular headache does not depend alone upon eye work at close ranges. Car sickness associated with headache, even if reading has been omitted, is an example. The shopping, cinema, and automobile headaches are in the majority of instances due to eyestrain. The headache may vary from a moderate frontal distress to violent explosions of pain, and may be localized in any portion of the cranium, and may or may not be associated with nausea and vomiting; a large percentage of the so-called "bilious headaches" are of ocular origin, and the head-pain often is migrainal in type. True migraine, however, is never, I believe, solely due to eyestrain, although this may be, and often is, an important factor in the complex etiology of this disease entity, and the most painstaking and repeated investigation of refractive error and heterophoria is an essential part of its management.

Contributing factors in the evolution of ocular headaches must be remembered. Many pure eyestrain headaches apparently continue even though the eye faults have been most accurately corrected. The failure of optical therapy in these instances often depends upon the surroundings of the patient during his working hours, and notable contributing factors are glare, imperfect illumination, unhygienic conditions and impure air. Too often the physician disregards this cause, and the patient thinks, or perhaps is encouraged to think, that the "glasses are wrong." Our duty is not strictly performed unless we ascertain exactly under what conditions the patient is employed. An alteration of illumination, an eye-shade, an improvement in ventilation may be all that is required. Glare is a particularly mischievous factor, and it is popularly believed that irritating rays passing to the retina are blameworthy. In point of fact, the pain it causes is largely, if not entirely, due to periorbital muscular compression, especially against the supraorbital notch; it is really a pressure-pain. Glare-pain and headache may require the use of variously tinted spectacles, but in my opinion their employment is rather overdone, and in this respect eyes are too frequently coddled. While tinted lenses should be worn when the need is evident, under most circumstances it is better that only ordinary glasses should be employed. Exclusive of glare, "the blessing of the sunlight" should not be disregarded. It is easy to create an undue sensitiveness to ordinary light, which has not previously existed.

Ocular headache may be, and not uncommonly is, only one link in the chain of the so-called eyestrain reflexes. Excluding the usual local irritation manifestations, we recognize eccentric poses of the head, distortion of the features, especially wrinkling of the forehead, contraction of the sternocleidomastoid, and tilting of one or other shoulder, even lateral curvature of the spine. In the latter circumstances, various types of heterophoria, notably hyperphoria and anomalies of the action of the obliques, maintain conspicuous influence.

Finally comes the long list of all manner of reflex disturbances: vertigo, one variety being characterized by a sense of falling forward when walking in a crowd, asociated with confusion of ideas; drowsiness, and, on the other hand, insomnia, timidity, night terrors and evil dreams; pseudo-chorea, habit-spasm, epileptiform convulsions, melancholia and neurasthenia; flatulence and other types of dyspepsia; indigestion and constipation; pains strangely and persistently situated in the nape of the neck, between the shoulder-blades, in the precordium, at the end of the spine, and deep in the mastoid. This category could easily be extended.

Fully aware that all such symptoms are frequently due to causes other than ocular strain, deprecating incomplete investigation from all standpoints, and conscious of the fact that the whole matter has not always escaped exaggeration, it is definitely the duty of physicians to recognize the relation of eyestrain to all of these and allied phenomena, and by a careful history and examination to eliminate it as an etiologic factor.

The cure of eyestrain headache depends in largest measure on the measurement and adjust-

ment of suitable lenses. The correction of errors of refraction and muscle balance is an art and a science. It must never be slovenly, never careless. This afternoon, however, we are not discussing treatment, as I understand it. Moreover, this largely concerns the conscience and work of the ophthalmologist. In many of the eyestrain problems the general physician and the specialist should work together to the same end.

Such "eyestrain" problems are often complex; when so, co-operation is the master word. Therapeutic success is what we desire, and only thus shall we achieve it.

An Address

ON

FIBROSITIS (MYALGIA, CHRONIC MUSCULAR RHEUMATISM)*

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IT requires a little courage to present a paper on this subject, for fibrositis, or myalgia, has no generally recognized pathology and the term has in the past been used very loosely to cover many pathological conditions. Hence very many clinicians will agree with Richard Cabot that "the diagnosis of rheumatism must be avoided like a blasphemy, unless we are forced to it by the exclusion of all other possibilities." In the Oxford *System of Medicine* indeed, the condition is ignored altogether; even lumbago is not mentioned.

With the rapid advances in scientific medicine, our professional training has become too scientific; it has not considered sufficiently how to relieve pain in chronic muscular and joint conditions; an apathy due largely to the fact that for many of these disabling complaints, no satisfactory pathology has been found. Just as Christian science arose through the failure of the medical profession to recognize and adequately treat the mental factor in disease, so the success of osteopathy and chiropractic is mainly due to the belief prevalent among the laity that when suffering from painful muscular and joint conditions, they can obtain relief more readily from irregular practitioners than from the medical profession. It is all very well to rail against the folly of the public; it is very wise to obtain where possible legislation against irregular practitioners, but we must also correct our own shortcomings which have made such opposition formidable.

In this spirit, I venture to address you on fibrositis, myalgia, or if you will, chronic muscular rheumatism, though we may freely admit that neither of these three terms is quite satisfactory in designating the condition to be described.

All general practitioners, I suppose, admit an acute and a chronic lumbago, but it is not so generally recognized that identical complaints may arise in muscular tissue or their sheaths and tendons far from the lumbar region; yet it is illogical to admit the entity of acute and chronic lumbago, traumatic or otherwise, and to dispute, in the presence of exactly similar symptoms, the same pathological condition in muscular and tendinous tissues elsewhere.

Ætiology.—On the general ætiology of myalgia, one or two remarks may be made: stout, middle aged people who perspire readily are frequently attacked, but weakly individuals also suffer, probably from overstress or even rupture of muscular fibres or tendinous strands on exertion. Very many patients date the onset of their pain and stiffness from some particular muscular strain, and these cases pursue a course indistinguishable from others in which no such traumatic history is obtainable. Chilling of the body, as from lying in damp grass after exertion, or from exposure to a current of cold air,

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sometimes precedes an attack of myalgia. The influence of infection seems undoubted. Many obstinate cases of myalgia clear up after removal of focal infection, in abscessed teeth or infected tonsils; many cases begin after an attack of tonsillitis or influenza, while chronic gonorrhœa is well known to give rise to obstinate muscular pains.

In epidemic influenza, Prof. Klotz has found post mortem, patches of muscular degeneration, involving sometimes only a few, sometimes many fibres. The primary degeneration may be attended with rupture of muscular fibre and hæmorrhage, and is followed by proliferation of fibroblasts, and the appearance of occasional lymphocytes and plasma cells, and ends in scars scattered through the voluntary striped muscle. Such pathological findings, Klotz thinks, may account for some of the muscular aches and pains so distressing in influenza. Rosenow's work on the elective affinity of germs for particular tissues is highly suggestive, but has not yet, I think, received adequate confirmation.

The nervous system must not be forgotten. In run down conditions, muscular pains often appear which vanish with improvement of the general health, while in other cases, myalgic pains, obviously following overstrain, are maintained indefinitely through the associated nervous element.

Symptoms.—The outstanding symptom of myalgia is pain referred to muscles or tendinous insertions; the pain is present only when the affected muscle is thrown into action and disappears with complete relaxation. One must add that, in acute attacks with severe pain, it is difficult to secure complete relaxation, so that pain may be complained of, even when the patient is lying quietly in bed, though it is greatly aggravated by coughing, sneezing or change of position. Stretching of the affected muscle by passive movement elicits pain; palpation shows the muscle sensitive to pressure, usually near its attachment; it is hypertonic, tense to the palpating finger and this is especially noticeable where, as in the trapezius, the muscular strands can be grasped between finger and thumb. This increased muscular tone, constantly present to some degree in the myalgias, probably interferes with the venous and lymphatic return from the muscle, causing slight swelling and hampering free movement.

It is admitted by most physicians who have specially studied the question that, in chronic cases of myalgia, circumscribed thickenings, at times spindle shaped when lying in the muscular tissue, but rounded or oval in the tendinous insertions, may sometimes be palpated with the muscle relaxed and may be exquisitely sensitive. Such nodules require some practice and patience for their detection, and the medical profession has been little accustomed to the careful palpation of muscular and subcutaneous tissues either in health or disease. I have personally palpated such nodules at the insertion of the cervical muscles to the occipital bone, at the iliac crests, and in the abdominal, gluteal and calf muscles.

Quite a controversy has arisen as to the exact nature of these nodules. Stockman of Glasgow, Llewellyn and Jones, claim that these nodules represent an inflammatory hyperplasia of the connective tissue, containing numerous fibroblasts with serous or sero-fibrinous exudation, and that while this hyperplasia may sometimes disappear, it often becomes more and more fibrous and may even involve adjacent nerve filaments. These nodules are specially liable to be felt in chronically recurring myalgias, are responsible partly at least for the aching and stiffness present in the intervals between more acute attacks and predispose to recurrences. But Adolf Schmidt of Bonn, himself a chronic sufferer from myalgia, claims that similar thickenings, sometimes quite sensitive to pressure, may be detected in *healthy* individuals both in subcutaneous tissues, in muscular fibres and in their tendinous insertions. Willy Alexander has found that some of these nodules disappear under an anæsthetic; that others may be palpated after death and yet may show nothing abnormal under the microscope: a negative finding which has been confirmed by other observers.

Hence the exact nature of fibrositis or myalgia is still in dispute, whether it be a true fibrositis, as Stockman thinks, or a disturbance of the colloid constituents of muscular tissue (Willy Alexander) or a neuralgia of the sensory nerves to the muscle (Schmidt). There is extraordinarily little pathological work on the subject and I think that at present the evidence is against accepting any pathological findings whatsoever.

Diagnosis.—The diagnosis of myalgia should be made only with the utmost caution; a careful history is essential; the patient must be stripped and

a thorough general physical examination made, before concentrating on the local condition. Without such precaution, gross errors of diagnosis are inevitable. Thus in the presence of general debilitating diseases, such as tuberculosis, the diagnosis of myalgia cannot stand; the scar of an amputated breast or an irregular prostate should rouse suspicion of malignancy; flat feet, spinal curvature and faulty carriage of the patient should direct attention to the orthopædic origin of the muscular pains; the occupation by a special strain on individual muscles, or the history of sudden onset under strenuous exertion may yield a clue; while teeth, tonsils, sinuses, urethra and prostate require consideration as the most likely sources of focal infection. These illustrations serve but to show the necessity of a broad survey of the patient, apart entirely from the local diagnosis which may be taken up in a brief review of the individual types of myalgia.

The three varieties of myalgia which are well recognized: torticollis, pleurodynia and lumbago, may be passed over with a single comment. The diagnosis of lumbago is arrived at too casually and should consider diseases of the vertebræ, spinal cord and its membranes, surgical renal diseases, pelvic disease, malignancy, the effects of old injury, orthopædic pains and the aching back of neurasthenia.

Gluteal myalgia: a not uncommon and little recognized variety, is frequently diagnosed as sciatica. A little care will however, elicit the fact that the pain does not radiate along the sciatic, but is rather diffusely referred to the gluteal muscles or along the outer side of the thigh. The sciatic is not tender on deep pressure and may with care be put passively on the stretch without pain; there is no disturbance of sensation and the ankle jerk is present. The same considerations will exclude secondary sciatica, arising from diabetes, or from pressure on the nerve by spinal cord tumour, by thickened spinal membranes, by tuberculous, malignant or osteoarthritic disease of the spine. In all obscure pains about the upper thigh, the rectum, and when possible in a woman the vagina, must be examined for possible tumour or inflammatory exudate, as well as for prostatic malignancy in man. The movements of the hip especially in abduction and in rotation should be tested, to exclude tuberculosis in the young, and osteoarthritis in elderly people; the latter disease is frequently overlooked. A radiogram of the lumbo-sacral spine and of the hips is often essential to exclude tuberculous and osteoarthritic disease and the rarer myeloma. A spinal puncture may be advisable should tumour or syphilis of the spinal cord be suspected, while a barium meal or enema may be required to exclude malignancy. The vexed question of sacro-iliac strain or relaxation may arise, and the relief given by a firm pelvic support may serve to strengthen this suspicion. Many indefinite pains around the hip joint too, are no doubt connected with inflammation of some of the twenty bursæ described by anatomists, but the symptomatology of bursitis in this position is still obscure. Flat feet and static conditions generally, as in occupations involving an unequal distribution of the body weight, must be remembered as a possible cause of gluteal pain, disappearing immediately on lying down.

Gluteal myalgia, like lumbago, may be acute and completely disabling owing to the severe pain, or may be associated with aching and stiffness, present especially on rising from the sitting posture or in going upstairs, and diminishing with a little exercise during the day. It is often easy to settle that the pain is actually referred to the muscles. With the patient prone the lower limb is abducted and overextended; the knee is flexed so that the gluteus maximus is relaxed and thorough palpation is made possible. Nodular thickenings exquisitely sensitive to pressure may sometimes I think, be detected towards the lower border of the muscle or more often at its upper insertion or farther forward below the iliac crest at the insertion of the gluteus medius. More often as admitted by all, extremely sensitive localized areas in the muscle are present, while associated muscular pains in the lumbar region or in the calf, confirm the diagnosis.

Myalgia of the calf muscles.—It is usually easy, with the muscles of the calf relaxed, to ascertain that the pain is referred to the muscle, and occasionally one may feel nodular thickenings or at least contracted strands of muscular tissue. Phlebitis must here be specially excluded; when there is some œdema of the foot and ankle, some enlargement of the veins, slight discolouration of the skin and later, possibly a tender, thickened fine cord to be felt, the diag-

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nosis of phlebitis is assured. But, as Ortner insists, phlebitis of the intramuscular veins may occur without œdema and with little venous enlargement. Here the diagnosis may be difficult or impossible, though recent pelvic infection or emaciation in association with, possibly, abdominal malignancy may point to phlebitis. In peripheral neuritis, especially of alcoholic or arsenical origin, the calf muscles may be very tender on pressure, but here, the muscular weakness, the accompanying sensory changes, the altered reflexes, together with the history should settle the diagnosis. In overstrain, the calf muscles often suffer and all cases of suspected myalgia of the calf must be studied from the orthopædic standpoint.

Occipital myalgia, the so-called "rheumatic headache". This variety is not so very uncommon and is, I think, seldom recognized. Here the patient complains of headache, which he refers to the occipital region, at times paroxysmal, but sometimes almost continuous, bilateral and referred to the muscular attachments, often extending downwards towards the shoulder, less often upwards over the scalp. The pain may be very severe and disabling, may be provoked by exposure or chill, and is aggravated by movements of the head. With the neck muscles relaxed, one usually finds very sensitive areas along the muscular insertions, and possibly nodules may be felt at the insertion of the trapezius or sternomastoid.

In the differential diagnosis we must exclude intercranial neoplasm or cyst, lues and chronic meningitis, diseases I need only mention. Against migraine, there is no aura, the pains in fibrositis are more continuous, remain in the occipital region or extend downwards, are not associated with vomiting and are more superficial. Neuralgia in this position can be excluded by its more paroxysmal character, by its radiation upwards, and by its characteristic point of tenderness at the exit of the occipital nerve (halfway between the mastoid process and the spines of the upper cervical vertebræ). The possibility of disease of the upper cervical vertebræ, of syphilitic meningitis, and of spinal tumour, must be remembered and excluded.

Brachial myalgia is not uncommon, especially towards middle age, and like lumbago is sometimes acute and extremely painful, at other times chronic with exacerbations and very intractable. The pain is rather diffuse, referred usually to the deltoid, though the pectoral or the lower end of the trapezius may be involved. There is little tendency to radiation as in neuralgia, and in pure cases, no sensory disturbance is present, though occasionally numbness or tingling is complained of in the hand, especially on the ulnar side. The patient anxiously avoids movement of his arm, can not lie on his affected shoulder, and suffers, sometimes acutely, even at rest in bed; while the pain is rather diffuse over the muscle, usually points of extreme tenderness may be discovered and with the muscle relaxed, occasionally thickened strands or nodules exquisitely sensitive may be palpated between finger and thumb in the pectoral or lower end of the trapezius. In other cases, the insertion of the deltoid into the humerus is very tender.

In the differential diagnosis osteoarthritis of the shoulder joint must be excluded; the limitation of joint movements, with the shoulder girdle fixed, the localized pain and the x-ray picture, are usually sufficient indications of this disease. Subdeltoid bursitis, occurring spontaneously or after injury, is very common; abduction of the arm and rotation are here interfered with, while adduction and forward and backward movements of the arm are free, and a tender area on pressure is present a little below the acromion.

Brachial neuralgia, which may be confused with myalgia, is lancinating in character, occurs in paroxysms, is less dependent on movement and may be associated with mild sensory disturbance in the arm and hand. It is often secondary to disease of the spine, and occasionally to spinal cord tumour, pachymeningitis or cervical rib. These diseases must be considered in the differential diagnosis of myalgia, an x-ray being often indispensable. The pains due to secondary deposits in malignancy must always be ruled out; anginal pains occasionally, and the shoulder pains secondary to diaphragmatic conditions exceptionally, may need consideration.

Myalgia of the abdominal muscles occurs occasionally and is very liable to be incorrectly diagnosed as appendicitis or cholecystitis. I have personally seen a number of such cases and have been struck with the bearing of traumatism or strain on these cases. Thus recently I saw a

man of thirty who complained of pain over the right costal margin, and who had been regarded for many months as possibly suffering from chronic gall-bladder inflammation. He had had no acute attacks of pain, as in acute cholecystitis, and had no dyspepsia, being able to eat everything. The gall-bladder visualized normally after tetraiodophthalein. Examination showed an exquisitely tender spot in the gall-bladder region *on* the costal margin, and not beneath it. The marked tenderness of this area did not diminish during expiration and was rather increased when on sitting up the muscle contracted. He worked all day at a desk and to get better light, sat for the most part obliquely, with his right costal margin resting against the hard desk. Evidently from pressure or from muscular strain in the cramped position, a myalgia of the insertion of the obliquus muscle had resulted. I have, in the last two years since my attention was directed to it, seen two other cases which were mistaken for chronic cholecystitis. In these, the rapid improvement under local massage corroborated the diagnosis.

Twice too, I have seen chronic appendicitis diagnosed and operation advised, when the condition was obviously myalgia of the outer edge of the rectus in the neighbourhood of the appendix. Parallel mistakes may occasionally arise in the epigastrium, left hypochondrium and over the pubes, at the insertion of the recti abdominis.

These difficulties arise mainly because the muscular wall is forgotten as a source of abdominal pain. The diagnosis of abdominal myalgia is as a rule easy. The pain is superficial, located in the muscles and increases when the muscular tension is raised by coughing or exertion. Tenderness on pressure continues or is increased when the patient bends his head forward or attempts to sit up, while in intra-abdominal conditions, the resulting muscular contraction diminishes the sensitiveness present to palpation. With the muscle relaxed, sometimes a thickened string can be felt running parallel with the muscular fibres. There is, of course, in abdominal myalgia, no history of dyspepsia characteristic of ulcer or gall-bladder, though occasionally Head's zone of cutaneous hyperæsthesia and of muscular tonicity secondary to intra-abdominal painful conditions is confusing.

Treatment.—Some general remarks may first be made. In chronic myalgia, the individual patient must be considered; his mode of life, his state of nutrition, his occupation, etc. If stout and flabby, regular exercises and games must be enjoined and the diet so arranged as to reduce weight, while constipation must in all cases be guarded against by a sufficiency of fluid, by fresh fruit and green vegetables, and possibly by liquid paraffin, though more active purgatives may be desirable in beginning of treatment. If thin and anæmic, the patient must be built up by appropriate fattening diet, fresh air, and possibly a vacation later.

Too warm rooms and impervious flannels promoting perspiration must give place to sensible hardening measures, and silk or woollen underwear. Foci of infection, as in teeth, tonsils, sinuses and prostate should be removed, and the possibility of chronic gonorrhœa be considered; the influence of chronic gall-bladder infection and of non-specific endocervicitis is not so certain.

Too often the symptomatic treatment, even in chronic cases is confined to the prescription of aspirin, or tablets of aspirin and phenacetin and a liniment. Though this advice may be all that is necessary in trivial cases, its failure too often leads the sufferer to seek relief from irregular practitioners, and so throws discredit on the medical profession. For chronic myalgia and even for subacute myalgia, the sovereign remedy is massage, a practical knowledge of which by the profession would, I think, combat most effectually the osteopaths and chiropractors. Such training should be obligatory in our curriculum. The medical practitioner need not practice massage himself, but should know how it should be given and what he may reasonably expect from its use.

For myalgia, general massage is useless. The sites of the tender areas or the nodules if present should be carefully ascertained, preferably by the doctor himself, and the masseur should direct his efforts against these areas. Though in acute cases, massage must be light with stroking movements of the tips of the fingers, as soon as possible, firm massage with tips of the fingers, combined later with friction and kneading is necessary to prevent recurrences. Usually the pain is considerably lessened in a few treatments, especially if these are preceded by hot baths or hot fomentations, but often persistent treatment for weeks is necessary to be of permanent value.

Where the tender areas are small and readily

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accessible, great improvement may often be obtained by the injection of 5 to 10 c.c. of body warm normal saline solution; a treatment which can be repeated every second day if desired. Both for neuralgias and for myalgias, normal saline injections are used much more in Germany than in this country. In place of saline, one-half per cent solution of novocaine may be used in 5 to 10 c.c. doses.

Even with massage and normal saline or novocaine injections, it must be admitted that many cases are very intractable; diathermy or quartz lamp treatment is, I think, of secondary value, compared with massage, but a visit to Hot Springs, Arkansas, in obstinate cases is sometimes very beneficial, if the patient have the good fortune to fall into the right hands at the Spa.

In refractory cases, the patient becomes very discouraged and neurasthenic, so that psychotherapy must be combined with physiotherapy.

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An Address

ON

OCCUPATIONAL THERAPY

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THERE are three great divisions of nursing which have arisen in the last few years. In the first place, *Public Health Nursing*, which undoubtedly has developed from ordinary nursing, and now has become a great force for the prevention of disease amongst the public. In the second place, *Social Service*, which I think truly originated in the old-time visiting nurse, who took an interest, not only in the maladies of her patients, but also in the environment which surrounded them, and was accustomed to study their relations and friends, from the standpoint of personal interest. Now lastly, there has arisen the division of trained nurses or aides associated with *Occupational Therapy*, which, though the youngest of this family, has rapidly spread throughout the continent of North America, and is making its appearance in many cities in Europe.

With the occurrence of the World War in 1914, a completely new problem presented itself to those in charge of hospitals, inasmuch as it was necessary to have the injured veterans for many months, and even years under treatment, and so a group of the more active minds saw the necessity for making use of occupational therapy as a definite type of treatment in the military hospitals. In Canada, the University of Toronto, inaugurated a course in this subject, which was given for a period of three months only, but, during that time about four hundred young women were accepted as graduates, and were appointed to military hospitals from one end of Canada to the other. The immense value of this work was seen not only in providing occupations to keep the soldiers satisfied, and contented while in hospital, but almost invariably, the officers in command found that it proved a means of aiding in recovery. As years have passed, we notice another advantageous feature, namely, that many of these men have developed highly artistic capabilities, and are making a livelihood by the work which they learned to produce while taking treatment; and throughout Canada there have been many exhibitions showing the excellence of the work which these soldiers have made.

In this occupational therapy field three sepa-

rate organizations have developed, which while definitely related one to the other, are yet quite different. Occupational therapy itself is strictly confined to the treatment of patients, with the intention of aiding in their recovery. The idea of their obtaining by this means any financial return, is in some parts of the United States completely tabooed, and the work of the men is destroyed when made, only to be again re-made. In some New York asylums, no raw material is bought, but the waste of the institution is made use of by the occupational aides and the patients reconstruct this waste into various materials by means of a loom and by other methods, so that occupational therapy is thus maintained as a plan of treatment, and not a means of obtaining financial return. In Canada, however, it is our custom to allow the patients to have their work sold, inasmuch as we feel that this appears to increase their interest and to be an additional motive in perfecting their work.

The second division, *sheltered employment*, includes all those forms of work which can be made use of in the Vet-Craft and other shops, where men who are unable to follow their former employment are given work for a definite number of hours, and for which they are paid at fixed rates. Here, the object is, of course, to enable the man to earn his living in a moderate way. The work-shops for the blind fall also into this division of sheltered employment, and in some cities there are work-shops with a similar object for the aged and infirm. Perhaps one might add to these the homes for incurables, where the patients cannot hope to regain their health, and where occupational therapy becomes purely a method of occupying the time and enabling the inmates to buy small luxuries from the work they sell.

The third and last division is that of *vocational rehabilitation* in which the men who are unable to go back to their old occupation are taught absolutely new work by which it is hoped they may be able finally to provide for themselves and their families. It is to be noted that the supplying of occupation is the basal condition in sheltered employment and in vocational rehabilitation as well as in occupational therapy; and although the idea of treatment is replaced by that of offering the man the means of obtaining a livelihood, nevertheless these three different organizations are one and part of the same plan, making use of occupation in different directions.

There are two forms of occupational therapy in practice to-day. First, general occupational therapy, which can best be explained by the following description: An aide placed on the staff of a general hospital will probably have so many patients placed under her care that it is impossible for her, as she passes from ward to ward, to study the characteristics of each case; so that she has as a consequence to give much the same line of work to patient after patient, without definitely selecting what is the most suitable for each case. The American hospitals overcome this in a great measure by demanding that no case be treated by an aide, except on a written prescription given by the physician in charge of the case.

General occupational therapy is interesting, and is valuable even when large groups of patients have to be managed by single aides, but it is instructive to compare this situation with one hospital in the United States where there are nearly as many aides on the staff as there are nurses looking after the patients.

Specialized occupational therapy is that form in which the work is definitely arranged to suit the individual patient; and this must be described more particularly under each different type of disease. The treatment of mental cases has received a wonderful advance since occupational therapy has been commenced in the hospitals for the insane. This is already becoming a world-wide system, spreading from the United States, where the work is most highly developed, throughout Canada where we have aides at the present time in every asylum in Ontario, and even across the Atlantic. It has been recently introduced in Glasgow where there is one of the largest mental hospitals, and it is now becoming a centre for developing the work in Great Britain.

In the State of New York a few years ago $40,000.00 a year was given in salaries to aides in the asylums. In this present year this grant has been increased to $200,000.00 a year. The work in these New York institutions is at present the best in the world, and their plan is briefly as follows: The patients are graded into different classes. The more inert types are simply given habit training. More mentally alert cases are taught very simple card and woven work.

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As improvement occurs, the aide advances the work to the arts and crafts that are customarily taught.

One of the great advantages which New York has at the present time, and which we intend to urge the Ontario government to introduce here, is that the New York State Board has attached to it, a chief aide, who passes from institution to institution and brings the work in each of them up to the highest degree possible.

In nervous cases occupational therapy has also a great value. The difficulty with these patients is to eradicate from their minds the consciousness of thoughts about their own bodies, and about past memories, and about their old environment. By bringing in an absolutely fresh interest one is enabled in a much shorter time to aid them to complete recovery. It is unfortunate to-day, that in the many rest homes for nervous patients in Ontario, there is practically not one that I can remember in which a definite course of this form of treatment is given to the patients, and it is high time that an improvement took place.

Cardiac cases are another field of great importance, and in some special hospitals for these patients, in the United States, aides have found definite work to do. The amount of occupation, and the nature of that occupation, becomes a means also of judging the ability of the patient to return to their ordinary work.

Amongst the institutions for tuberculosis a very wide field is at the present fairly well occupied. The possibility of infection issuing from the articles produced by tuberculous patients is easily met, by confining their skill to the many types of work which can be thoroughly disinfected before leaving the institution.

In contrast with the medical field which has just been described, the surgical one is becoming wider each day. While massage and other treatments are excellent for certain types of injuries, yet with a majority of those who suffer from stiffened joints and other surgical conditions of an orthopedic nature, the best treatment that can be given is to make the patient employ the injured limb in some definite type of work which will ensure movement of the defective joint, not two or three times a day, but possibly thousands of times in two or three hours' work. The necessary treatment to be applied in each individual case demands careful observation of a very resourceful aide. In some instances it may be better to prescribe a course of Badminton, rather than restrict the patient to a more serious endeavour. The Workmen's Compensation Board for the Province of Ontario, have come out definitely in favour of this form of treatment, and its patients are to be found filling the Central Work-Shop on Bloor Street every morning in the week.

In some parts of the States this feature of the work has appealed so much to the laity, that the work is supported to a great extent by the large insurance companies.

The different types of occupation that an aide has to obtain a knowledge of are extremely diverse, starting with simple basketry (and it may interest you to know that in some places, the aides actually grow the reeds for this work), and passing on to raffia which is beautifully constructed into purses by the soldiers in France as well as in Canada; the branches of this type of weaving form a very large feature. Weaving by hand looms is another successful department in which rugs, silken scarves, even complete dresses are turned out, and which in many cases forms a line of treatment particularly valuable for injured limbs and arms. The best work in this line may be seen by a visit to the school at Boston, where it is the principal therapeutic measure. Metal work in brass and copper has probably never been done better than under the care of the army aides at Christie Street Hospital, Toronto. This type of work is very popular with men and is generally preferred to the various forms of wood carving, which the aide also must know but which takes a longer time to teach the patient. Pottery, as yet, has not been used in the Toronto school, but where suitable clay is available, it should form a very interesting form of work. The making of jewellery is a type of work that requires a great deal of time, but gives pleasure to certain mentalities who select it. Batik, a process of dying, is generally used in all institutions, but perhaps the most beautiful examples of this work are shown in the school at Philadelphia. Book binding, cement work, cord work, design, stencilling, and toy making with wood working in its many forms, form part of the courses which the aides are taught, and which they re-teach to their patients.

In the work-shop at Toronto a special type of

work that has been popular is artistic leather work, and nowhere on the American continent does one see such beautiful objects of all sorts as have been turned out in this little work-shop which has been running for about three years at the present time.

The development since the war of schools for the training of aides to teach occupational therapy is an interesting and important problem. The two most prominent at present are the Boston School, where the course is being raised to two years, and the School at Philadelphia, which gives its certificate after a course of one year. There is also a very excellent school in Wisconsin where the work taught is of a very high class indeed. The Walter Read General Hospital in Washington, with a much shorter course, has also a high reputation. In addition to these are many smaller schools, mostly struggling for an existence, and turning out their aides in a shorter time. The most desirable plan is to develop a course of about two university terms, or about fourteen or fifteen months, if taken continuously. It may interest you to know that the University of Toronto starts its first course, since the original three months' course which was given at the time of the war, by going to the root of things, and by laying down a two years' course of university length, and demanding for entrance junior matriculation.

Lastly one must refer to the development and future of occupational therapy on this continent. There are organizations in the United States, in California, Cleveland, Connecticut, District of Columbia, Duluth, Kentucky, Illinois, Iowa, Massachusetts, Michigan, Minnesota, Missouri, Philadelphia, and Wisconsin, and at the last convention about a thousand delegates from all parts of the States were present.

As an example of the work in the region of Philadelphia, within fifteen miles of the city itself, there are twenty-eight hospitals, institutions and homes which have definitely appointed aides, varying from one to three for each hospital, and making a total of fifty-two in actual service in that vicinity. This does not include the fifteen State hospitals and mental institutions, which also have from one to six aides attached to them.

In the Dominion of Canada the work so far is organized most satisfactorily in Toronto, where we have aides attached to the General Hospital, St. John's Hospital, Home for Incurables, Tuberculosis Sanatorium at Weston, the Institution for the Blind, and in addition have a large central work-shop, where private patients may be sent by their physicians, and where the workmen sent by the Compensation Board also attend, and public patients from all the city hospitals are treated free of charge, owing to a system of bursaries which have been introduced. This work, which has only been advancing over a period of about four years, has a great future before it, and one feels that at the meeting of the Dominion Medical Association in 1927, an organization should be formed for the whole of Canada.

The Cause of Trachoma.—Declared a "dangerous contagious disease" by the U. S. Public Health Service in 1897 and one which has cost thousands of foreigners their privilege of entry into the promised land of America, trachoma, a dreaded eye infection, may eventually yield to the magic of vitamins or proteins. Dr. B. Franklin Royer, medical director of the National Committee for the Prevention of Blindness, says that trachoma which often ends in blindness may be a deficiency disease like scurvy, rickets, beri-beri, pellagra, and another eye disease, xerophthalmia. The fact that on Ellis Island, where hundreds of cases of trachoma were handled each year and where there has almost always been some trachoma, no doctor, nurse or orderly has ever seemed to contract the disease, has made him believe that its infectiousness and transmissibility may have been overrated. In long steerage trips from eastern Mediterranean ports passengers with trachoma never caused outbreaks of this dangerous disease during the voyage. In reviewing the medical literature of trachoma thoroughly, Dr. Royer says he was also amazed to find no convincing evidence either of dangerous contagiousness or of the successful transmission of the disease. Practically all studies contained statements that might have been copied from the ancient Greek doctor, Hippocrates. "We can not escape the thought that if this disease is due to a definite germ, it in some deliberate way shows an affinity for the poor and underfed of the world, and truly infectious diseases do not respect social conditions and food habits. On food studies alone, exhaustive inquiry must be made in the homes in which trachoma has occurred and must cover a number of years."—*Science*, Sept. 10, 1926.

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THE PRACTICE OF MEDICINE*

Abstract of Inaugural Address of the President of the Academy of Medicine*

By A. J. Mackenzie, B.A., M.B., LL.D.

Toronto

THE President, in a few appropriate words, thanked the Fellows of the Academy for the honour and distinction of being elected to occupy a position which had been previously occupied by men of such distinguished attainments. Mention was made of the growing activities and increasing influence of the Academy in the life of the profession in Toronto and throughout the province.

The President drew a word picture of the long history of medical activities and the changing position of the physician from that of seer and prophet working with mysteries of which he knew little or nothing, to his present position of counsellor and friend to his patients. While every honest and thoughtful practitioner must recognize how inadequate is our mental and physical equipment for our protean task, the unhappiness of our position lies in the fact that the sufferer, overcome by fear and helplessness, demands of us omniscience and omnipotence. He does not expect this from his advisors in other forms of human activity, but if we fail to solve his problem or meet his need, he considers our science wholly bankrupt. Science has solved some of the problems, but many are still enigmas. Like Sisyphus, earnest toilers everywhere roll with infinite labour the stone almost to the summit, only to have it fall back again, but undismayed, they begin over again, and now here and now there, one like Wassermann or Banting succeeds. In the meantime, the practice of medicine, for the greater part, remains an art and not a science, doing its beneficent work in the way experience has taught.

I confess that, as a practitioner of internal medicine, I envy the position of our surgical colleagues who have so often a definite task before them, with the definite results of their skill apparent; I envy too the worker in preventive medicine who, by the help of science, has in the last generation made straight the path of countless multitudes and brought a new and brighter dawn for the great army of the little children. We all can feel proud of these achievements of our profession and all can share in the glory of its unselfish service to the race, even though we strive to make the race freer of those maladies on whose existence our livelihood depends. This is a paradox that the Shavian Philosopher could not accept, but it is true nevertheless, and we can proudly point to many of our number in the past, and to many even in this present so-called mercenary age, who have earned that best reward of duty well done, without the monetary rewards that repay other activities. Of them we can say with Sir Thomas Browne "Thy good works, not thy goods will follow thee, since riches are an appurtenance of life, and no dead man is rich."

New ideas are likely to be regarded with suspicion, but I would urge that there is a danger in an attitude of intellectual negativism. We may often have been fooled by an *ignis fatuus* but we must remember that some of our great advances have come from those from whom little was expected. It is the imagination of the artist, the scientist, the explorer that sees a vision hidden from the ordinary man.

> "Ah! but a man's reach should exceed his grasp—
> Or what's a heaven for?"

Your first duty is to your patient and I boldly affirm that you would be recreant to your trust if you feared to withhold from him any means of help which you can honestly hope to be beneficial.

> "He either fears his fate too much
> Or his deserts are small,
> That dares not put it to the touch
> To gain or lose it all."

So if you can win through to this position, that knowing what you can certainly do, and knowing also the much greater sum of what you cannot do, you give to your patient honest service, so

* Delivered before the Academy, Toronto, Oct. 5, 1926.

that he loses no chance of benefit by your carelessness; if you add to this what of hope and confidence may be his so that the path even of the incurable may be brighter for your visit and his burden less, I think then you can hold up your head among your fellows. It is easy to point to failures; it is easy to be cynical and satirical, the doctor is the easy mark of many a joke, not always too kind; but when illness comes, how pathetic is the call for help.

Little by little, in spite of the years of futile research, in spite of even the insincerity of science and the work of quick "resultors" so pilloried in Arrowsmith, grains of gold are garnered from the sand. Here in this Academy, we have the opportunity to increase our knowledge, to learn what others know, to find the latest and the most dependable means of diagnosis and treatment. In this way the Academy does a real service for the people of our city. It is in your hands to make it such in a constantly increasing measure, so that you, and your patients, may reap the benefit from our association and labours.

PRE-OPERATIVE AND POST-OPERATIVE PRINCIPLES*

By R. V. B. Shier, M.B. (Tor.), F.A.C.S.

Toronto

THE title of this paper is one which concerns nurse and doctor alike. It is one phase of our work in the healing of mankind where co-operation is most essential, and where it is important that the nurse in charge should understand the why and the wherefore of the measures adopted in each particular case. In the past there has been too little pre-operative preparation, because often those in charge lost sight of the fact that it takes a great deal more than a surgical operation to cure a great number of patients. In the future surgery must cease, more and more, to be merely a technical problem, and surgeons of the present and future, in order to improve the immediate operative mortality, the percentage of cures, and the degree of economic efficiency, must be first physicians, and be fully aware of the biochemical processes at work in the living organism. Also not only are we as a nursing and medical profession, realizing the importance of adequate preparation, but the public are becoming alive to the fact. It is particularly annoying to read in the daily press that so-and-so died as a result of, or following an operation. This, as we know, is not the case in the great majority of cases. Patients as a rule die of a disease; any surgical procedure undertaken was an attempt to combat that disease.

There has been, we are glad to say, a rapidly growing tendency toward the unity of all departments of medicine, but possibly no single branch has influenced and will continue to influence surgical results like the study of biochemistry. This is as it should be, for we poor humans are simply a compound of fats, sugars, proteins, inorganic salts and water, while our waste products are largely carbon compounds, the result of metabolism. Therefore the application of biochemistry to solve some of our pre-operative and post-operative problems is only logical.

Outside of surgical emergencies, such as acute appendicitis and traumatic conditions, the majority of patients will be found to be chronic invalids, suffering from one or more of the following: first, toxæmia; second, anæmia; and third, dehydration. The toxæmia referred to has been as a rule existing for a long period of time, and may be of many different types. The patient with a chronic focus of infection has a saturation of bacterial toxins. The patient with toxic goitre has had excessive quantities of thyroxin, usually of abnormal chemical composition, circulating in his blood stream, often for a number of years. The diabetic has an acidosis,

* An address delivered before the Graduate Nurses Association, Ottawa.

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the result of nature's efforts to manufacture a false sugar (acetone) from fat, all because the warehousing function of the liver for sugar is out of commission. The toxic products in these cases are diacetic and betaoxybutyric acids. The patient with obstructive jaundice often has an acidosis because of disturbed liver function, due to a definite lesion in the liver tissue. On the other hand, in cases of intestinal obstruction, in addition to histamine poisoning, we have a definite alkalosis. The degree of alkalosis increases in intensity, the nearer the obstruction is to the duodenum, and the blood chemistry is so altered that we have an increase in the carbon dioxide combining power, an increase in non-protein nitrogen, and a decrease in blood chlorides. Finally, we have the patient with altered kidney function, resulting in uræmia, as seen in prostatic obstruction or bilateral kidney stone, or other kidney lesions interfering with the normal excretion of urine.

As a result of these various poisons, or other blood-destroying agents, we have varying grades of secondary anæmia, and the effects of these various poisons are augmented by a lack of fluid intake, resulting in what we call dehydration. This lack of fluid is certainly not conducive to health.

Now, what have we at our command to help to re-establish anything like a normal balance in these patients, thus making them as safe as possible for surgical operations? The first and most important is water, and the only indication for limiting the intake of water is œdema. If œdema is absent the supply of fluid given should not be less than 3000 c.c. per twenty-four hours, and may be much more in badly dehydrated patients. The fluids referred to are water, saline solution, glucose solution, and milk or other fluid nutriment, and are given by mouth, interstitially, or intravenously. Other measures adopted are suited to the case in hand. The patient with acidosis must receive glucose freely. Glucose is a monosaccharide, and supplies a readily handled food. If acidosis is present the need for acetone is dispensed with, when glucose is supplied. The patient with alkalosis can be redeemed from his toxæmia by giving sodium chloride solution interstitially or intravenously, the amount necessary being determined by a daily blood chemistry study. Ammonium chloride per rectum is a quick method of raising the blood chloride. Under no circumstances should a patient with alkalosis receive sodium bicarbonate or other alkali. Just here let me say that the common practice of nurses giving soda to a vomiting patient is a dangerous one, until the blood chemistry has been determined. The thyrotoxic patient, in addition to fluids, should receive iodine to enable the thyroid gland to manufacture a normal thyroxin, while the jaundiced patient should be given calcium chloride intravenously once daily for three days, to hasten the clotting time of the blood, which is delayed in the presence of jaundice.

The foregoing remarks deal with the management of toxæmia, which may be largely corrected by overcoming dehydration, or by increasing elimination by giving sufficient fluid. There remains the question of secondary anæmia, and our most efficient means of correcting this is by blood transfusion, especially if there is a question of urgency. Dietetic measures, and medicinal remedies, will help correct the blood dyscrasia, but are more time-consuming.

To recapitulate: we have water, glucose, salt solution, and blood transfusion, any one or all of which it may be necessary to use judiciously for a week or ten days, to convert a doubtful risk into one of safety. Patients commonly think this quite a long period, but when it is pointed out to them that such preparation makes for safety and a shortened convalescence, they readily agree.

All that has been said regarding pre-operative preparation applies with equal force in post-operative care. But we will approach this subject in a slightly different manner, and deal specifically, for the sake of emphasis, with certain outstanding problems as they affect the nursing. For the first three days at least, the average patient who has had an operation of any magnitude, should receive at least 3000 c.c. of fluid. This may be administered by mouth, interstitially, or intravenously, as already pointed out. Our practice of late has been to commence an interstitial of saline immediately on the patient's return to bed. About 1000 to 1200 c.c. are given over a period of two hours or more, when the flow is discontinued, to be recommenced some three or four hours later, leaving the needles in place in the interval. This method is no better than any other which avoids undue distension of the tissues over a long period of

time. Needles should always be inserted through a wheal of novocaine or other local anæsthetic, and should point backwards toward the axillæ. At the same time water is to be given freely by mouth. Intravenous administration of saline or glucose is reserved until definitely indicated. We have given up the rectal administration of fluid, the so-called Murphy drip, on account of the uncertainty of the quantity of fluid absorbed, and the annoyance it causes both patient and nurse in the majority of cases.

The next point to be considered is the control of pain. The question of how much and how often morphia alone, or combined with atropin, should be given, can be answered in only one way—a sufficiency to keep the patient absolutely comfortable mentally and physically. In abdominal cases the quantity of sedative required is reduced by the application of a linseed poultice. The great point during the early period of convalescence is freedom from pain. Post-operative pain comes from two main sources: first, the wound, particularly the parietal peritoneum; and second, distension; the first on the first day, and both for a few days following. Painful wounds are avoided by gentle manipulation on the part of the surgeon, and by avoiding unduly tight suturing, for approximation and not strangulation should be the aim of wound closure. The causation of post-operative distension is a problem concerning which certain factors are known. Blood chemistry studies tell us that the blood must contain 0.4 per cent of chlorides before peristalsis can take place, or in other words there is no intestinal movement if the blood chlorides fall below that point. A temporary paresis frequently exists for the first twenty-four to thirty-six hours after an abdominal operation. This quickly recovers, or does not occur at all if the exhaustion has been efficiently treated before operation. One frequently hears the term paralytic ileus applied to a persistent distension, even up to the point where bowel contents are vomited. I am convinced that true paralytic ileus is a very rare occurrence, if it occurs at all, and that any intestinal distension persisting or commencing after the first thirty-six hours is intestinal obstruction of mechanical origin, or the result of a localized or general peritonitis. However, it is with the early temporary paresis causing distension that the professional nurse is particularly concerned; and just here let me point out that she must be sure that the patient really has sufficient distension to cause pain, for patients with wound pain frequently hold their abdominal muscles so rigid that they mimic distension very closely. Granted that true, gaseous distension exists, the most efficient means of exciting intestinal peristalsis, provided the chloride content of the blood is normal, is by pituitrine ½ c.c., and eserine grains 1/150, given together, thereby increasing their value by six times. An enema may be given to hasten relief, but by all means avoid useless and unnecessary enemas in the first thirty-six hours of convalescence.

Post-operative nausea and vomiting ceases to be a very great factor if the foregoing principles are recognized. Vomiting when it occurs may be classified as toxic, obstructive, and neurotic. We have already dealt with the question of toxæmia, and have outlined the means of preventing and treating it. When intestinal peristalsis has been established, either by chemical or surgical measures, the vomiting due to obstruction is relieved. There are some people who have an idiosyncracy to morphine, and are made to vomit by its use. This must be borne in mind, but it is not of such frequent occurrence as to alter the general principle of its general use for pain. Occasionally the vomiting seems to be of a purely neurotic nature. A few years ago I made the statement that any vomiting not the result of intestinal obstruction, which persisted past the third day, was likely to be of neurotic origin. With increasing knowledge, and a proper conception of a biochemical basis for a good deal of our post-operative worries, the cases of neurotic vomiting have grown fewer in number. Nevertheless the fact remains that some cases of persistent vomiting of clear fluid are readily cured by a good dose of bromide per rectum, or the application of a stomach tube.

Sleeplessness may be treated by various means. The first question to the sleepless patient should be "What keeps you awake?" If it is the bed, change it from the Gatch frame to a straight mattress. Let all patients change their position frequently. If it is pain, combat the pain. If it is a state of mind, which it commonly is later on in convalescence, one must convince that patient that he can be made to sleep. In our experience this is best accomplished by codeia gr. 1, and chloral hydrate, gr. 20, a combination

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first recommended to me by Dr. Wm. Goldie of Toronto. Paraldahyde oz. ½ to oz. 1, in oz. 2 of olive oil, given per rectum, is also very efficient in conquering these stubborn cases of sleeplessness.

We have dealt with the physical difficulties of our patients, but do not let us forget that a strong mental factor exists in a number. If all people were endowed equally with mental equilibrium there would be no reason, why one uncomplicated case should have a convalescence different from another. But doctors and nurses know that patients vary a very great deal. It is of little use in saying, "O, he or she imagines this or that," and expect that time will effect a cure. Imagination is a disease, and a very difficult one to treat. The old adage that an ounce of prevention is worth a pound of cure never was more applicable than here. Make your patient co-operate in the recovery. If the wound is infected, if phlebitis develops, or any other complication arises, he should be made to realize that some responsibility should be shared by himself and his tissues, for a lowered resistance to infection may have been there, and it undoubtedly is there in a number of cases prior to operation. We are not responsible for the disease, but are concerned chiefly in piloting the patient safely through to complete recovery, or in making the passage from this world to the next easier for him. Too many patients adopt the attitude that they are martyrs to science. About the worst thing for a nurse to do in the case of the imaginative patient, or indeed of any other, is to follow, chart in hand, the physician or surgeon outside the closed door, or to point out in the presence of the patient certain facts already noted on the chart. These are both useless performances, and only serve to breed suspicion on the part of the patient. For being open, honest and above-board we are rewarded with confidence, and imagination is choked out.

As we realize more and more that science is necessary in the principles of pre-operative and post-operative control, so soon will our results improve in depth of gratitude from our patients, as well as in reduction of the operative risk in those suffering from diseases requiring surgical measures.

The Toxin of Streptococcus Scarlatinæ.—In a contribution to the *Journal of Experimental Medicine,* October, 1926, Charles W. Duval and R. J. Hibbard argue that the toxic principle of the streptococcus scarlatinæ is bound up in the cytoplasm of the micro-organism, and is not a soluble toxin. Experiments carried out on rabbits are related. These animals do not show toxic reaction to large primary doses of the streptococcus, but after several injections for immunization purposes an unduly large dose may produce toxic effects. This is attributed to the development of a bacteriolysin, during the immunization process, which effects liberation of an endotoxin. If it were due to a free toxin, the symptoms should follow the primary injection. The authors describe their method of obtaining a bacteriolysate from animals injected intraperitoneally with large doses of streptococcal culture. Both the lysate and its filtrate contain a toxin which, while violent in action, does not compare in potency with the soluble toxin of *B. diphtheriæ.* This, when injected intradermally in the non-immune human subject, produces a reaction comparable to that of the Dick test. When the lysate is injected intravenously into rabbits, severe toxic symptoms follow. Injection intraperitoneally or subcutaneously does not produce such marked changes in the kidneys or other organs as follow intravenous injection. "The constant occurrence of the lesion in the kidney tuft suggests a selective action of the streptococcal endotoxin and permits of the deduction that the mortality in the experimental animal is the result of an acute hæmorrhagic glomerulonephritis. Furthermore, the location and character of the nephritic lesion of the rabbit indicate that the acute nephritis in human scarlet fever is caused by certain hæmolytic streptococci.

W. H. Hattie

INDICATIONS FOR USE OF EXTRA-PLEURAL THORACOPLASTY*

By Herbert M. Rich, M.D.

Detroit

I FEEL that in presenting this topic before the Laennec Society, it is "bringing coals to Newcastle" since it was from a member of this Society that I first heard of thoracoplasty, and was convinced that it was a practicable and useful procedure. There are however good and sufficient reasons why this subject should be well discussed again in such a society as this. The operation has shown its usefulness. It is here to stay until something better is found. The number of patients whose lives may be prolonged, in many cases by years of usefulness, is very large. The number of surgeons qualified to undertake the operation is increasing rapidly. And finally and most important is the fact that this operation calls for the maximum of co-operation between the physician and surgeon. In no other surgical procedure, to my knowledge, does the ultimate success of the surgeon lie so much in the judgment of his medical colleague as in this one. And in like manner in no other instance in which a physician transfers his patient to a surgeon's care, will the result depend so much on his own co-operation as in this one. The surgical technique has now been well developed and agreed upon and it behooves us likewise to standardize our indications in recommending a case for operation.

The use of compression of one lung in unilateral pulmonary disease was put on a firm basis in 1907 when Saugman added the manometer to the artificial pneumothorax apparatus devised and used by Forlanini. The value of this method of treatment was soon demonstrated. As cases accumulated it became very evident that here was a therapeutic measure of great usefulness. It also became evident that a large number of cases suitable for compression were denied the benefit of that procedure since it was impossible to produce artificial pneumothorax because of the presence of old adhesions. Additional procedures were then devised to extend the benefits of this treatment to these patients. Jacobaeus used the thoracope to locate adhesions and to cauterize them under visual direction.

Phrenicotomy, or division of the phrenic nerve was used to compress the lower lobe of the lung by paralyzing the diaphragm on one side. This in a normal case reduces the capacity of one side of the chest by about 20 per cent, but in practice varies greatly in consequence of the presence of pathological factors in the thorax.

The chief procedure, however, which has been used in this situation is extra-pleural thoracoplasty, and to the indications for this procedure this discussion will be directed.

The effects of compression of the lung toward the hilus are chiefly two: First, the production of physiological rest, and second, the drainage of the diseased lung by pressing all the fluid and semi-fluid contents into the bronchi whence they may be coughed out. The circulation of the lymph carrying toxins and bacilli is stopped. The walls of cavities are brought together. Under these conditions there is a rapid growth of connective tissue which encapsulates and heals the lesions. Thus in the compressed lung we secure lessening of the toxæmia, healing of cavities, cessation of the destructive process of caseation, and relief from or actual prevention of hæmorrhage. One great advantage of this form of treatment is that it is applicable to advanced cases. In brief, the indications for the use of extra-pleural thoracoplasty are the same as the indications for therapeutic pneumothorax, the surgical procedure being resorted to when it is impossible to make use of simple air compression.

We have long been accustomed to have patients live very happily with only one leg, one eye, or one kidney; but the idea of living with only one functioning lung is somewhat more novel. It is quite as practicable, however, as the other conditions. It presupposes that the

* Read before a joint meeting of the Trudeau and Laennec Societies, London, Ont., May 25, 1926.

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good lung is able to carry on the function of respiration. This means that the treatment is available only for the so-called unilateral cases. In a sanatorium for all stages of tuberculosis, these unilateral cases number from three to eight per cent at a given time. The incipient case of to-day, however, may reappear in a year with cavity, and in general, Riviere's dictum is true that "most progressive cases of phthisis at some time in their course must reach a stage where compression might be used to advantage, and that a case unsuitable to-day might have been suitable yesterday or may become so to-morrow."

The chief indication for compression then is advanced tuberculous disease of one lung which can not be expected to recover with non-operative treatment. The type of patient best adapted to the procedure is the patient who looks well and feels well, having temporarily arrested the progression and acute symptoms of the disease. Temperature is normal. The good lung shows no sign of active disease. Nutrition is often only slightly impaired. Examination of the diseased lung, however, shows one or more cavities surrounded by a zone of coarse and fine râles. There is always sputum,—usually containing tubercle bacilli. Not infrequently the quantity of sputum in twenty-four hours is quite large; *e.g.*, 12 oz. Compression of the diseased lung by therapeutic pneumothorax is impossible because of adhesions. Such a patient may be said to have arrested the constitutional phase of the disease and to be suffering only from the effects of disease localized in one lung.

The prognosis in such a case, when under expectant treatment *only*, offers very little hope of further improvement. This phase ends sooner or later by the disease becoming again progressive. The presence of stiff-walled cavities with positive sputum and the constant danger of severe hæmorrhage indicate to the knowing the fact that the end is inevitable even if delayed. To such a patient, however, the operation of thoracoplasty offers the chance to secure healing of the diseased lung and restoration in a large degree to the normal activities of life. When thoracoplasty has been performed, the outcome of the case rests largely on the ability of the other lung to function and to withstand infection. If the so-called "good" lung breaks down promptly after compression of the diseased side, then the patient's life will be shortened by the operation.

In considering the indications for operation, then, much depends on the condition of the good lung. The correct forecasting of the possible reaction of this lung to the operation is the most difficult and important part in the selection of cases for this procedure. Naturally with advanced disease on one side it is inevitable that there should have been some tuberculous invasion of the good side. The extent of this invasion can be determined with satisfactory accuracy by the x-ray plates. The activity must be decided by the clinical examination. The number, character, and location of the râles are important. Medium and coarse râles are usually heard in front over the hilus region of the good lung in these cases. They may often be disregarded; but the characteristic persistent fine râles of the parenchymatous lesion heard at the periphery of the good lung, anywhere from apex to base, should be regarded with great suspicion and should lead to a decision to postpone the collapse of the other side, if there seems any likelihood that the lesions on the good side may heal under expectant treatment if given time.

It not infrequently happens that we see a patient with a considerable area of moist râles on both upper lobes, but with definite signs of cavity on only one side. After a few weeks of strict rest in bed the râles on the one side will be greatly diminished, while little or no change has taken place on the side with cavitation. In such instances it is usually safe after six to twelve weeks to begin compression.

Thoracoplasty is also indicated in most cases of therapeutic pneumothorax which have done well under compression, but in which the lung has expanded and becomes adherent, and the disease in the lung has again become progressive.

Another group of cases in which thoracoplasty is a life-saving procedure is composed of patients with successful pneumothorax finally becoming complicated with purulent fluid. This tuberculous pyo-pneumothorax may be a fatal complication unless promptly drained and closed by operation. If treated by direct drainage (thoracotomy) the opening through the chest wall frequently does not heal. The tuberculous lung disintegrates rapidly and the end of the patient's life is near. We now empty the pleural cavity of fluid with a needle of relatively small

calibre and irrigate with some cleansing solution. Then while the cavity is empty, extra-pleural thoracoplasty is performed and the pleural cavity closed by pressure.

The actual size of the lesion in the good lung is not necessarily a deciding point as to whether or not to operate. A healed lesion, even if of considerable size, may be disregarded while a small active lesion should always give cause to pause. X-ray plates of the chest taken at fairly frequent intervals, during the course of the disease are a great help in deciding upon the condition of the two lungs. The improvement which leads to cessation of the constitutional symptoms in the most favourable type of case, permits healing in the better lung and the formation of much protective scar tissue in the diseased lung. The development of this condition can be easily followed by serial x-ray plates.

In cases of persistent hæmorrhage, compression is the most effective treatment. In early cases it is usually possible to accomplish this by air compression, but when this is not available thoracoplasty is certainly indicated.

If the prognosis is satisfactory with medical treatment surgical procedures should not be considered. In the first and second stages with infection fairly well resisted and the patient in good general condition, conservative treatment should be followed. But moderately advanced cases which are stationary should be gone over carefully with the possibility of compression of one lung in mind. The stationary type with tendency to fibrosis is the one most likely to be greatly benefitted by compression, the pneumonic and miliary type much less so. Fairly large cavities limit the degree of recovery in patients apparently doing well otherwise, and such patients will often become our most promising candidates for good results after surgical intervention. If a recurrent hæmoptysis is present in such a case, surgical intervention should not be delayed unless there are grave contra-indications.

Contra-indications.—Progressive disease in the better lung is an absolute contra-indication. Marked emphysema especially in elderly persons is a contra-indication as is also serious heart or kidney disease. On the other hand laryngeal or intestinal tuberculosis, unless of an advanced degree, need not interfere with this form of treatment.

Pregnancy as a complication should be managed on the general rules pertaining to tuberculosis and this condition. It is not necessarily a contra-indication to any form of compression.

In closing I beg to emphasize the importance of good team-work between the physician and surgeon in these cases. Since the condition within the diseased lung varies so greatly, it is essential in order to obtain the best results that the physician place his knowledge of the pathology of the particular case fully at the service of the surgeon. This includes especially the location of cavities and the length to be removed from each rib to insure sufficient collapse. The latest x-ray plates of the chest should in every instance be taken to the operating room so that the conditions within the lung as revealed in the lung may be fresh in the surgeon's mind.

The usefulness of this procedure in bronchiectasis is still under question. I will show slides of one case so treated. The rapidity with which the second lung becomes infected provides an indication for very prompt consideration of surgical methods when the diagnosis is once established. It seems probable that with an early diagnosis and prompt operation with a special care towards continued compression of the base of the affected lung over a long period of time, we may ultimately expect considerable help from this operation.

The Psychoses and Psychoneuroses are very entertainingly discussed in the *Lancet*, Sept. 4, 1926, by Henry Yellowlees. A striking point in the differentiation is the loss of insight by psychotics as contrasted with its retention by psychoneurotics. Yellowlees contends that the melancholiac really loses insight, although the reverse is the usual teaching, and that psychotics are born while psychoneurotics are made. He concludes that "whether or no the road from sanity to insanity be a long and slow one, it certainly does not pass through a neurosis. Whatever the borderline case about which so much is written may be, it is not, in one case in ten thousand, a person who is wavering between a neurosis and a psychosis." W. H. HATTIE

XUM

AN IMPROVED MODE OF EXPRESSION OF HÆMOGLOBIN VALUES

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Hæmoglobin values are usually expressed in percentages for clinical purposes, a certain standard value being assumed to be 100 per cent in value.

This assumption has as an underlying idea the practically unvarying content of hæmoglobin in normal human blood. As Williamson[1] has pointed out, this is not a correct assumption, the actual value varying greatly with age, especially from birth to sixteen years, and after that period varying also with sex. His curve of value plotted against age is complex.

Thus, for males at birth the normal figure is 137 per cent, at two years 75 per cent, and between twenty and fifty years, 100 per cent.

It has accordingly been suggested by Williamson[1] and others, (Todd[2], Haden,[3] Lindsay[4], Krumbhaar[5],) and the suggestion is at present being considered by the American Association of Clinical Pathologists (Kolmer[6]), that *hæmoglobin values should be expressed in terms of number of grams per 100 c.c. of blood.* While such a mode of expression would undoubtedly be more accurate, we submit that it will be even more difficult for the clinician who is very specially interested in the practical side of the problem, to derive easily the condition of a child's blood from such a statement as:—

> "X, female, aged twenty-three months, has a hæmoglobin content of 12 grams per 100 c.c. blood."

especially if he happens to remember that the normal hæmoglobin content of blood is generally stated to be 16.9 grams per 100 c.c.

Most practitioners have now considerable experience in interpreting the results of determinations of the basal metabolic rate. These, usually ascertained by clinical instruments in terms of oxygen consumption, are referred to standard tables, the figures of which vary for age, sex, weight, and height. The results are sent to the practitioner in terms of plus or minus percentages. A value of plus 25 per cent for a particular individual (no matter what the age, sex, weight, or height may be) connotes a definite condition from which his doctor can derive, along with his clinical observation of the case, a perfectly definite conclusion.

Such a figure is merely based on the consideration that for any particular age, sex, height, and body-weight there is a definite normal value which is plus or minus zero per cent for that particular series of data.

We suggest that a similar mode of evaluation can easily be applied to figures for the hæmoglobin content of blood, and that, *knowing the age and sex, plus or minus percentage values can be ascertained from which at once the practitioner can draw a definite conclusion.*

In order that this may be carried out satisfactorily, the true normal values must be known for all ages and both sexes, and not merely the average normal values, but the normal degree of fluctuation about these averages, so that the normal limits may be recognized (corresponding to the plus or minus 15 per cent in basal metabolic rate determinations that Benedict maintains is within normal limits).

The most extensive and accurate investigation on which such values can be based is that of Williamson[1]. From it we have deduced the values in Table I. The figures are given in grams per 100 c.c. of blood. The maximum and minimum values and the percentage variations from the means will be analyzed subsequently.

It is doubtful if the full degree of variation in normal hæmoglobin values is generally recognized. Not only is there that variation with age and sex that has already been referred to, but *there is a marked normal variation between different* individuals of the same age and sex, and, still further, *there is a distinct hourly variation in the same individual.*

The latter was emphasized in 1920 by Dreyer, Bazett and Pierce[7], and has been confirmed by

TABLE I

VARIATIONS OF HÆMOGLOBIN WITH AGE AND SEX

Age	Males				Females			
	Min.	*Max.*	*Mean*	*Percentage Variation from Mean*	*Min.*	*Max.*	*Mean*	*Percentage Variation from Mean*
days								
1	18.7	26.7	23.3	−20—+15	20.3	27.3	23.1	−12—+18
2–3	18.9	25.7	22.5	−16—+14	20.6	26.2	23.0	−10—+14
4–8	16.8	28.4	22.0	−24—+29	19.3	24.9	22.1	−13—+13
9–13	18.9	25.3	21.3	−11—+19	18.3	26.1	21.3	−14—+23
months								
0.5–2	11.1	25.7	18.7	−41—+37	12.8	22.6	18.0	−29—+26
3–5	10.5	16.5	13.1	−20—+26	12.6	15.8	14.2	−11—+11
6–11	8.0	15.8	13.2	−39—+20	11.2	16.4	14.2	−21—+15
years								
1	9.1	15.5	12.9	−29—+20	7.8	16.6	12.2	−36—+36
2	9.4	14.4	12.4	−24—+16	10.6	14.0	12.8	−17—+ 9
3	11.6	15.0	13.2	−12—+14	11.1	15.3	13.1	−15—+17
4	11.1	14.7	13.3	−17—+11	12.0	16.0	14.0	−14—+14
5	11.8	15.4	13.8	−14—+12	11.6	14.8	13.2	−12—+12
6–10	13.4	15.8	14.6	− 8—+ 8	11.8	15.4	13.8	−14—+12
11–15	12.1	16.3	14.5	−17—+12	12.7	15.9	14.9	−15—+ 7
16–20	14.2	19.4	16.8	−18—+18	13.7	17.1	15.7	−13—+ 9
21–25	15.0	18.8	17.2	−13—+ 9	13.6	16.8	15.0	− 9—+12
26–30	14.2	18.2	16.4	−13—+11	14.0	17.8	15.6	−10—+14
31–35	15.1	20.3	16.9	−11—+20	13.2	17.6	15.4	− 8—+ 8
36–40	15.5	18.7	16.9	− 8—+11	12.1	18.1	15.3	−21—+18
41–45	15.3	18.5	16.9	− 9—+ 9	14.4	17.8	15.6	− 8—+ 8
46–50	15.1	19.5	17.1	−12—+14	12.9	17.9	15.5	−17—+15
51–55	14.5	20.1	15.9	− 9—+26	13.7	17.7	16.1	−15—+10
56–60	15.2	18.6	17.0	−11—+ 9	14.2	17.0	15.8	−10—+ 7
61–65	15.2	18.8	16.4	− 7—+ 8	14.5	17.9	15.7	− 7—+14
66–70	14.7	18.7	16.1	− 9—+10	13.0	17.6	15.6	−17—+13
71–75	13.6	17.4	15.2	−11—+14	13.0	17.8	15.4	−16—+16
Over 75	13.9	17.3	15.7	−11—+10	12.7	17.1	15.1	−16—+13

Rabinowitch[8] using venous blood, and by Mills[9] using capillary blood. Rabinowitch, on twenty normal individuals, found in two cases variations of 26 per cent, in four cases variations between 15 and 20 per cent, and the average variation for the twenty was 12.4 per cent. Mills, using only blood from cases of anæmia, found smaller variations, in one case 11 per cent, in two over 7 per cent, and in sixteen an average of 5 per cent. Such variations normal to the individual cannot be disregarded.

We have been unable to find any extensive series of figures showing the maximal and minimal figures for *different individuals* of any particular age and sex. We have had to fall back on Williamson's data, and to utilize his averages for the values *above the mean* and *below the mean* figures, doubling the difference between these averages and the corresponding mean of all in order to ascertain the approximate maxima and minima. These, along with the percentage variations from the means calculated by their use, are given in Table I.

On examining this Table it becomes evident that if the figures for from 0.5 month to 1 year inclusive are excluded, scarcely any variations lie outside the limits of plus or minus 20 per cent. The actual averages of the mean variations, excluding the period indicated, are from minus 14 to plus 13 per cent for males, and plus or minus 13 per cent for females. It is probable that had Williamson split up his age-groups between 0.5 month and one year into series of narrower limits, then, since this is evidently the period of most rapid change with age, the variations for such groups would be in general agreement with those for the younger and for older ages, and one may feel justified, therefore, in assuming that the normal variation around Williamson's mean figures for any particular age and sex does not exceed 20 per cent.

We have been able to determine the hæmoglobin content for a series of infants. As will be seen from Table II, in which these results are recorded, the figures show good agreement with Williamson's, when the limited number of children measured is taken into account. The results are given in grams per 100 c.c.

The astonishingly low values obtained by Williamson for children between the ages of three months and three years suggest the desirability of a repetition of his determinations between these age limits, on children *living under ideal conditions*. This, unfortunately, will be difficult

TABLE II
HÆMOGLOBIN CONTENT OF THE BLOOD OF INFANTS

No. of Cases	*Age*	*Extreme Values*	*Average Value*	*Value from Williamson's Chart*
1	8 hours	.....	21.5	23.2
3	15, 18, 21 hours	21.3–24.0	22.3	23.2
5	2–3 days	20.1–22.8	21.6	22.7
8	4–10 days	19.6–23.3	22.3	22.1

to accomplish, since such children are the most difficult to obtain access to.

The diurnal variation that has been referred to appears to be usually between 10 and 20 per cent, *i.e.*, at most not more than plus or minus 10 per cent about its mean value. This, not improbably, accounts for part of the variation recorded for different individuals, and these two variations are certainly not fully cumulative.

In considering the total variation that must be admitted as coming within normal limits it is further necessary to take into account the limit of error of the method employed, and the personal error of the technician.

While the clinical colorimetric procedures generally used are obviously much less accurate than either the spectrophotometric method employed by Williamson or even the acid-hæmatin procedure of Newcomer[10], yet, when carefully employed, the difference between the results obtained is not great.

Thus we have carried out twenty comparisons on nineteen different individuals, two different observers using, respectively, the Newcomer procedure and that of Sahli with the glass standard. The extreme difference obtained was 108: 100 (in percentage values). The average difference was only 4 per cent.

Nevertheless, as Haden has pointed out[3], different pieces of clinical apparatus may give huge differences in results, and it is necessary that any such apparatus be standardized before use.

We do not propose in this short note to examine critically the various modes of determining hæmoglobin values. Such critical comparisons have been made by Senty[11], Lindsay, Rice,

TABLE III
MEAN NORMAL VALUES OF BLOOD HÆMOGLOBIN

Age	*Hæmoglobin in grams. per 100 c.c. blood*		*Hæmoglobin in per cent (100% = 16.9 grams per 100 c.c.)*	
	Males	*Females*	*Males*	*Females*
Birth	23.2	23.2	137	137
2 days	22.7	22.7	134	134
4 "	22.4	22.4	133	133
6 "	22.1	22.1	131	131
10 "	21.4	21.4	127	127
20 "	20.1	20.1	119	119
1 month	19.0	19.0	112	112
2 months	16.2	16.2	96	96
4 "	13.6	13.6	80	80
6 "	13.4	13.4	79	79
9 "	12.9	12.9	76	76
1 year	12.6	12.6	75	75
1.5 years	12.4	12.4	73	73
2 "	12.6	12.6	75	75
3 "	13.1	13.1	78	78
4 "	13.5	13.5	80	80
5 "	13.7	13.7	81	81
7.5 "	14.1	14.1	83	83
10 "	14.4	14.4	85	85
12.5 "	14.7	14.7	87	87
15 "	15.4	15.0	91	88
17.5 "	16.5	15.3	98	91
20 "	16.8	15.4	99	91
30 "	16.9	15.4	100	91
40 "	16.9	15.4	100	91
45 "	16.9	15.4	100	91
50 "	16.9	15.7	100	93
60 "	16.6	15.9	98	94
70 "	15.9	15.4	94	91
80 "	15.7	15.1	93	89

and Selinger[4], and others. Our own experience is in agreement with the conclusion of these investigators, and we would recommend the Newcomer procedure for hospital laboratories, and the Sahli apparatus with a glass standard for office or bedside use. The latter should, whenever possible, be checked before use against the Newcomer procedure.

We consider that, even when the greatest care is employed in using any ordinary clinical procedure, the variations known to occur and the error of the procedure do not allow a value within plus or minus 20 per cent of the average normal to be held as outside normal limits.

Whether the average figures in Table I are sufficiently accurate for standard use depends, of course, on whether Williamson's results are based on a sufficiently extended series of observations. *This does not affect the value of our suggested mode of expression.*

The method of calculation, and the advantage to be gained from the mode of expression that we recommend, can best be exemplified by consideration of a few actual measurements. For convenience in making the calculations Williamson's average figures, obtained from the smoothed curve, are given in "percentage" and actual values in Table III.

The determinations in the following four cases were made by the Newcomer procedure.

Case 1.—E., 3 days old, normal infant, hæmoglobin 135 per cent, or 22.8 grams per 100 c.c. From Table III normal for this age is 22.5 grams per 100 c.c. or 133 per cent.

Result: $\frac{(135-133)100}{133}$ or $\frac{(22.8-22.5)100}{22.5}$ = 1 per cent

Case 2.—G., 4.5 years old, male, hæmoglobin 68 per cent of 11.5 grams per 100 c.c. From Table III the normal value is 13.6 grams per 100 c.c. or 80 per cent.

Result: $\frac{(68-80)100}{80}$ or $\frac{(11.5-13.6)100}{13.6}$ = − 15 per cent

This normal result was in complete agreement with the condition.

Case 3.—Mrs. D., aged 42, hæmoglobin 56 per cent or 9.5 grams per 100 c.c. The normal from Table III is 15.4 grams per 100 c.c. or 91 per cent.

Result: $\frac{(56-91)100}{91}$ or $\frac{(9.5-15.4)100}{15.4}$ = − 38 per cent

This was a case of carcinoma of the uterus with profuse metrorrhagia over a period of two years. The result is, therefore, fully in accordance with the condition, and, expressed in this form, evidently gives a good clue to the degree of anæmia.

Case 4.—Mrs. M., aged 48, hæmoglobin 62 per cent, or 10.5 grams per 100 c.c. Normal value from Table III 92 per cent or 15.6 grams per 100 c.c.

Result: $\frac{(62-92)100}{92}$ or $\frac{(10.5-15.6)100}{15.6}$ = − 33 per cent

This was a case of severe pernicious anæmia with an unusually high hæmoglobin content.

We suggest that such a case as No. 4 should be reported from the laboratory in the form:

Mrs. M., 48 years.
Hæmoglobin: normal....15.6 grams per 100 c.c.
found...10.5
Result: − 33 per cent

Summary

It is suggested that the hæmoglobin content of the blood of a particular age and sex can be most accurately and most usefully reported in plus or minus per cent of the average normal value of that particular age and sex.

Values within plus or minus 20 per cent must be regarded as within normal limits.

A table of normal values based on Williamson's smoothed curve is included.

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Influenza and Schizophrenia.—In a study of the psychiatric aspects of influenza, Karl A. Menninger (*American Journal of Psychiatry*, April, 1926), points out that following the 1918 epidemic a very large percentage of the mental disorders attributed to it were diagnosed as belonging to the schizophrenic syndrome. Of about two hundred acute post-influenzal psychoses admitted to the Boston Psychopathic Hospital, one-third appeared to be, and were diagnosed as, dementia præcox. It has been possible to follow-up about fifty of these cases, and of these about two-thirds have apparently recovered and not more than ten show no improvement. This would seem to indicate the need for either new diagnostic criteria or new prognostic conceptions for the acute schizophrenic syndrome. —W. H. H.

XUM

HEREDITARY ABNORMALITIES OF THE EYE

I. Introduction: The Laws of Heredity and Their Exemplification in the Inheritance of Eye Colour

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THERE are well recognized laws, first enunciated by Mendel a half century ago and further elaborated by workers in the last twenty years, which govern the inheritance of many characters, such as the colour of hair, eyes or skin, the number of the digits, etc. Inasmuch as these laws explain, in the majority of instances, the inheritance of diseases or defects of the eye with which this series of papers will deal, they will be summarized here, and may be most easily illustrated by a consideration of the inheritance of eye-colour in the human subject.

1. All qualities or characters which an individual possesses, for example the colour of the eyes, are due to the inheritance from *both* parents of some factor relating to that character.

2. Many of these characters may be classified under two headings, dominant and recessive. By dominant characters we mean those which *must be expressed* in the individual as evident traits if he or she has inherited them. Such a trait in man is the brown eye colour. If a person has inherited the factor responsible for brown eye colour from either parent, then that person must have brown eyes.

By recessive characters we mean those which *may or may not* be expressed as evident traits in the person who has inherited them. An example in man is blue eye colour. If such recessive characters remain latent, due to their being overshadowed by the presence of a dominant character, it is impossible to tell from appearances that they have been inherited. On the other hand, they may be expressed, if they are present in double quantity, since then no dominant factor can conceal them. This condition is possible only when two recessive factors have been inherited—one from each parent.

3. With respect to eye colour there are three types of persons: (1) those who have inherited the factor for brown eyes from both parents; (2) those who have inherited the factor for blue eyes from both parents; and (3) those who have received the factor for brown eyes from one parent and for blue eyes from the other. In the last case, blue being overshadowed by, or recessive to, brown, does not become evident, and the colour of the eyes is brown.

4. An individual may transmit to his children either factor for eye colour which he has received from his parents, but he can pass on only one of them to any one child. If both factors for eye colour are identical it makes no difference which of the two is lost in the maturation of the germ cell, since the end result will be the same. If the factors are different, that is, if there are present both brown and blue producing elements, then the parent may pass on *either* the factor for brown or for blue, but *not both*, to any one child. He may transmit brown to one child and, later on, blue to another.

5. When the germ cells contain two factors that are identical for the production of a character, the person is spoken of as "pure" for that character, and all his children must possess that character no matter with whom he is mated. If the character in question is a dominant one, all the children will exhibit it; if it be recessive, they may possess it as a latent character, or may exhibit it. For example, the African negro is pure for brown eyes, and no pure-blooded negro, and indeed no mulatto, (that is, the offspring of a pure black and a pure white person), can ever have blue eyes. On the other hand, certain races of northern Europe, as those of Scandanavia, are pure for blue eyes, and never show brown unless there has been an intermixture with individuals having brown eyes.

When the germ cells contain two differing factors, the person is known as a "hybrid" for

that character. A person may be pure for one character and hybrid for another.

6. Inasmuch as there are three types of persons with respect to the brown and blue eye-colour, (see paragraph 3), it follows that any one type might be mated with any other type, thus producing six possible varieties of mating. It must be remembered that only one factor can be transmitted by a parent at a time, and it depends upon chance which of the two factors will be transmitted. A hybrid, containing factors for brown and blue eye-colour, will pass on brown as frequently as blue. A diagram of the six matings is given below, showing the eye-colour of the parents, and of the offspring, and the factors for eye-colour in the germ cells of both parents and offspring. All possible combinations of the factors in the germ cells of the parents are used.

	Parents				Offspring			
Mating	*1 Eye-colour of parents*		*2 Factors for eye-colour in germ cells*		*3 Eye-colour of offspring*		*4 Factors for eye-colour in germ cells*	
I.	brown (pure)	brown (pure)	brown brown	brown brown	brown (pure)		brown brown	
I.	brown (pure)	blue (pure)	brown brown	blue blue	brown (hybrid)		brown blue	
III.	brown (pure)	brown (hybrid)	brown brown	brown blue	brown (pure and hybrid)		brown brown	brown blue
IV.	blue (pure)	blue (pure)	blue blue	blue blue	blue (pure)		blue blue	
V.	brown (hybrid)	blue (pure)	brown blue	blue blue	brown (hybrid)	blue (pure)	brown blue	blue blue
VI.	brown (hybrid)	brown (hybrid)	brown blue	brown blue	brown (pure and hybrid)	blue (pure)	brown brown	blue blue
							brown blue	brown blue

Table showing the six possible matings of blue and brown eyed individuals

In matings I and IV, in which pure stock is bred with pure stock, we find that the offspring are all of one type, and that the type is pure for the eye-colour in question; all the children in mating I being pure for brown eyes and all those of mating IV being pure for blue. In mating II, where a parent pure for brown eyes unites with one pure for blue, all the children are brown-eyed, but they all carry the possibility of also transmitting blue. In mating III, where both parents are brown-eyed, but where one is pure for brown and the other is a hybrid, the children are again all brown-eyed. They are of two different classes, however, since half of them are apt to be pure for brown and the other half hybrid. They are indistinguishable in appearance, and from eye-colour alone it cannot be decided to which class they belong. In mating V a blue-eyed parent joins with one who is a hybrid for brown. Half the offspring are apt to be brown-eyed hybrids, and the other half are apt to be blue-eyed.

In all of the above five matings, not once do the children exhibit an eye-colour that has not been present in the parents, or at least in one of them. The heredity is quite obvious. In mating VI, however, we find a different condition. Here both parents have brown eyes, and give no indication that they carry blue latent, yet they produce a blue-eyed child. By making all possible combinations of the factors for eye-colour present in the germ-cells of the parents we get an average of three brown-eyed children to one blue-eyed child. The brown-eyed are again of two types, pure and hybrid, there being one pure to every two hybrids. The blue-eyed

child has inherited its blue eyes from *both* its parents, neither of whom had blue eyes.

This latter type of mating is of the greatest importance in explaining how defects, which may be latent in two parents like the blue eye colour, may suddenly appear in a family. There may possibly be no history of the presence of the defect in the parents or in their ancestors. Such defects are as truly inherited, even though there be no history of their occurrence for generations, as are those which are obviously transmitted from parent to child. The heredity of recessive characters that are rare is often difficult to determine in man, where the matings appropriate for proving the hereditary quality of the characters cannot be made, as is the case with animals.

Marriage of first cousins has usually been held to be inadvisable, lest it produce defects in the children. Marriage of relatives of any degree is not in itself productive of abnormalities in the offspring unless there are recessive factors for defects in both families. When this is so, however, the marriage of first cousins is obviously more apt to produce defective children than would be the mating of these individuals with unrelated stock.

Some of the deductions to be drawn from the above table of matings are as follows:

1. Dominant characters are not inherited by children whose parents do not possess that character. (See mating IV). They may be inherited from only one parent. (See matings II, III, V, VI).

2. Recessive characters may be inherited by children neither of whose parents display the character. (See mating VI). They are always inherited from both parents if they are obvious. (See matings IV, V, VI).

3. In a mixed population, recessive characters are less apt to be present than are dominant; recessive characters tending to occur in 29 per cent of the population, as against 71 per cent who display the dominant.

In the next paper, those inheritable defects or diseases which involve the eye-lids will be dealt with.

Antidiphtheritic Measures in Belgium.—In Belgium it is not obligatory on practitioners to notify diphtheria; a fee of five francs is offered for so doing, but probably many cases elude official notice. Diphtheria antitoxin is, however, available free for the use of doctors where there is any chance of the patient being unable otherwise to get it, and apparently advantage is widely taken of this privilege. Dr. A. Bessemans, Chief Inspector of Hygiene, has recently reported to the International Health Office on the means taken in Belgium to discover susceptible persons and to confer upon them an active immunity. The experience of the Belgian Health Service now covers more than 5000 persons who have been subjected to the Schick test, and the figures, classified in age-groups, bring out well the resistance inherent in the child at birth, its gradual loss within the first two or three years of life, to be replaced by a progressively increasing resistance acquired from exposure to infection. In the age-group 0 to 6 months the percentage of positive reactors was only 36, rising to 76 in the age-group 2-3 years, and gradually falling to 25 in the age-group 17-19 years. As elsewhere, a higher percentage of negative reactors was found in the poorer urban quarters, especially where overcrowded, a population in which a history of previous sore-throat is relatively common. Dr. Bessemans's observations on diphtheria carriers are particularly interesting. They give no sign of a high degree of natural or acquired immunity, a fact which suggests to him that it is not the mere saprophytic presence of bacilli in the throat which confers immunity, but a definite attack of disease, however slight. Dr. Bessemans himself regards the Schick test as in the highest degree trustworthy, for to his knowledge no single one of the 3067 Schick-negative cases contracted diphtheria, while at least 11 Schick-positive cases contracted the disease, the diagnosis being confirmed by culture. He confirms Zingher's statement that no fear of anaphylactic symptoms need arise from repeated injections of vaccine, for it is always the first which provokes the greatest reaction.—*Lancet*, Sept. 18, 1926.

DIURESIS AND THE NEWER DIURETICS—AMMONIUM CHLORIDE AND NOVASUROL*

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IN the last few years ammonium chloride and novasurol have been used successfully in the treatment of œdemas which could not be influenced by diet, digitalis, or any of the older diuretics. Their vaunted success has led many investigators to try them in varying conditions of œdema. It is fairly safe to state that these drugs have by now found their therapeutic levels, and one can use them rationally, knowing their possibilities, their dangers, and their limitations.

In order to understand the action of these two drugs, it is necessary to review briefly the subject of diuresis, so that they may be placed in their proper relation to the other diuretics.

In the last decade diuresis has ceased to be regarded as a process solely concerned with the kidneys. It is true that the kidneys play a great part in that process, but the newer physiology places great emphasis upon the rôles of the tissue fluid and blood plasma. The physico-chemical state of the blood plasma determines to a great measure the power of the kidneys to act, and the condition of the plasma depends upon its relation with the tissue fluid. Now the tissue fluid is normally contained within the tissue cells, and it interacts with the blood plasma via the semi-permeable membranes which form the cell walls. The process of diuresis, then, depends upon the relations between three fluids separated by two barriers, *i.e.*, the tissue fluid, the blood plasma, and the urine, communicating via the cell membranes and the kidneys. The function of the kidney depends, in a measure, upon the condition of the fluid supplied to it, *i.e.*, the plasma.

Any substance which produces diuresis may do so in more than one way. It may act upon the kidney directly, or the plasma, or the tissue fluid, or the cell membranes, or on any two or more of these factors which comprise the process of diuresis. A good example is the diuretic action of water. Water diuresis was long considered a simple process in which the blood was thinned by the water, and the kidneys performed a secondary filtration. Of late this theory has been challenged. Research has shown that only occasionally is hydræmia found in water diuresis. Water diuresis has not yet been explained beyond the statement that it is not a matter of mere hydræmia, but one of complicated physico-chemical changes in the plasma, in which an important factor is the ionization of the inorganic constituents. This aspect is brought forward to demonstrate that even the simplest mode of producing diuresis is a complicated one.

Caffeine is considered as having a purely local action on the kidney. Perfused kidneys were rendered more permeable by a solution which contained caffeine citrate, and what is more important, the oxygen requirement of the kidney per cubic centimeter of secretion was not increased. The latter observation shows that caffeine throws no increased work upon the kidneys, but by its mere presence renders the glomeruli more permeable. The caffeine action is ideal, but often proves ineffectual. The reason is evident: the kidneys may be more permeable, but, if the plasma is not in a physico-chemical condition to be dealt with, or if it does not reach the kidneys in sufficient quantity and force, of what avail is their increased permeability?

There are two other diuretics, namely, sodium

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chloride and urea, to be discussed before considering the two drugs which are the subject of this paper, because the latter are closely related to the former.

Sodium chloride diuresis is an example of the diuretic action of all ionizable salts. It dissociates in aqueous solution into Na^+ and Cl^-, and it forms the classical example of diuresis produced in a purely physical way by means of the process of osmosis. When sodium chloride is injected into the blood, it causes a flow of tissue water into the circulation. In that process the major rôle is played by osmosis and the permeability of the tissue cell walls. The kidneys act in a subsidiary way in reducing the increased aqueous content of the plasma. All inorganic salts, when absorbed into the circulation, act in that way, and those that have the greater power to ionize are of greater avail in the diuresis. Both calcium chloride and ammonium chloride are ionizable, and primarily their action is chiefly centered in the reaction between tissue fluid and plasma fluid.

Urea is a well known diuretic. Its mode of action is considered to be chiefly in the tubules of the kidney. Normally, water is excreted through the glomeruli, and it is the function, in part, of the tubules to re-absorb the excess water that has passed through. But when urea is excessive in the tubules, it balances the osmotic pressure in favour of the tubules, so that there is a lesser amount of water re-absorbed from them, depending upon the concentration of urea present. Urea thus aids in the elimination of water by playing its part in the tubules of the kidney.

Digitalis is a well known diuretic, but it is only given when the heart is not functioning properly. Its chief duty in diuresis is to get the plasma to the kidney in sufficient force and amount.

Ammonium chloride, as pointed out, is an ionizable inorganic salt. It is metabolized and excreted chiefly as urea, and partly as ammonia.* By the use of this drug, we have a diuretic which first acts like all ionizable salts, and by its metabolized product acts like urea. Like sodium chloride, it acts on the tissue cell wall barrier, bringing water into the circulation, and, like urea (into which it is ultimately converted), it acts upon the kidney barrier, causing a reduction in the amount of water re-absorbed by the tubules. It produces its effect by a double action, one following the other, so that its effect is both powerful and sustained.

From its mode of action, it is evident that ammonium chloride cannot be used as a universal diuretic. It can only abstract water into the blood from the tissues, but it cannot make the glomeruli function, nor can it get the blood to the kidneys. It requires as pre-requisites for its function (1) that the blood reach the kidneys in sufficient quantity and with ample force (that depends upon the state of the circulation) and (2) that the glomeruli function. When either of these two pre-requisites are absent, it cannot work.

Novasurol is an organic mercury compound which is readily absorbed into the circulation. Like all other mercury compounds, it is very toxic to the kidney. If given in very small doses, it does not damage the kidney, but only irritates it, spurring it on to greater and forced action. It chiefly affects the permeability of the glomeruli, although it may exert some effect on the other barrier, namely, the cell walls. When it fails to act, it may be assumed that usually the condition of the plasma is at fault, and that sometimes the glomeruli are beyond the state of being irritated and are completely destroyed, from the point of view of function. All conditions, such as enteritis, which contra-indicate mercury therapy are also contra-indications for novasurol.

Now, a word about the chemical findings of cases treated with ammonium chloride. When this drug is taken, *an acidosis develops*, because the conversion of NH_4^+ into urea consumes the bicarbonates which form a portion of the alkali reserve of the blood. This acidosis may be severe and cases with much renal damage should not be given massive doses of this drug without due circumspection. There are two things to consider: firstly, there is an already existing nephritic acidosis which will be increased by this drug, and secondly, in severe nephritis the blood urea is already very high, and the administration of ammonium chloride will only increase it. The use of ammonium chloride in nephritis is only to be permitted when nitrogenous retention is

* This was proven experimentally by the author on cases actually treated with ammonium chloride in the wards of the hospital.

only slight. Consequent to the blood acidosis, the urine increases in acidity. There is also a relatively greater number of Na^+ over Cl^- in the urine. This excretion of Na^+ is a characteristic of all urines consequent upon the disappearance of any œdema. The acidosis produced by ammonium chloride cannot be said to cause the diuresis, as the degree of acidosis bears no relation to the amount of urine excreted. The acidosis must be considered an unavoidable complication of ammonium chloride therapy.

The chemical findings in cases treated with novasurol are negative except that the urine excreted contains an absolute increase in Na^+ K^+ and Cl^-. Further, after injection of this drug, *albumin and blood frequently occur* in the urine. The latter two findings quickly clear up upon cessation of the drug, but they are of use in determining whether the toxic point has been reached. The drug should never be given in sufficient amount to produce blood in the urine. When that occurs more damage is liable to be done than good. A smaller dose, often half a cubic centimeter, is sufficient where blood appears with one cubic centimeter.

Appreciating to some extent the action of these drugs, it is logical to expect cases of œdema in which neither will act alone, but which will be influenced by both. Furthermore, there are even cases where the two combined will not work. For instance, ammonium chloride could not be expected to act when the kidney "filter" was destroyed, and where the circulation was not able to carry the plasma to the kidney. Take a case with deficient liver function. If ammonium chloride be used, it could be only partly successful, because the urea formation from the NH_4^+ (which is a function of the liver) would be decreased and the latter half of the process of diuresis, as caused by ammonium chloride, would be lost. In that case, if ammonium chloride and novasurol were used together, success could be expected.

In cases where ammonium chloride is ineffectual by itself, it would appear theoretically possible that, if caffeine or diuretin were used with it, good results could be expected.

If in another case the plasma were such that it could not abstract water from the tissues by its own osmotic force, of what use would stimulation of the kidney be by novasurol? In such a case, if ammonium chloride were given, it would transport the water from the tissues, and the kidneys might be able to eliminate it without added stimulation.

To summarize, diuresis consists of four physiological parts:

1. Transference of fluid from tissue to plasma by osmosis.
2. Transference in sufficient *quantity* and *force* of the circulating plasma to the kidneys.
3. Secretion or filtration by the kidney glomeruli.
4. Re-absorption by the kidney tubules.

To complete the whole process, it would require:

1. Digitalis (if indicated) for transference of the plasma in sufficient force and quantity.
2. Ammonium chloride which absorbs water from the tissues into the plasma and by its end product, urea, prevents re-absorption, in part, of water from the tubules.
3. Novasurol which stimulates the kidney to greater action.

Thus, by the use of these drugs, we enhance every one of the four physiological processes of diuresis.

Some clinicians report favourably upon treatment of ascites, due to other causes, *e.g.*, cirrhosis of the liver, Banti's disease, etc., with ammonium chloride and novasurol. The rationale of treatment in these cases is the same as in any other ascites, either cardiac or nephritic.

There are two uses to which novasurol and ammonium chloride may be put in conditions where there is no œdema. These have never before been referred to and are put forward by the author as suggestions.

One half cubic centimer of novasurol injected intramuscularly will produce, in a normal individual, very marked diuresis which lasts from six to twelve hours. The author has confirmed this in three normals. In one case the output was 3500 c.c. in six hours.

Now in increased intracranial pressure whether due to injury, apoplexy, uræmia, or toxins such as alcohol, it is recognized treatment (besides other measures) to give some saturated solution of magnesium sulphate frequently by mouth. It is argued that dehydration so produced, diminishes the amount of cerebro-spinal fluid (C.S.F.) and thus reduces the intracranial pressure. One

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half c.c. of novasurol will produce much more dehydration than the usual amount of magnesium sulphate given, and would therefore be much more efficacious in reducing the C.S.F. pressure. This method of treating increased intracranial pressure should be given a fair trial and it is probable that it may prove a useful addition to our armamentarium in treating such conditions.

Novasurol and ammonium chloride may enable us to introduce a modification of the Swift-Ellis procedure in treatment of cerebro-spinal syphilis. In the Swift-Ellis treatment and its modifications (*e.g.* Dercum's) lumbar puncture is always required. Puncture cannot always be done and the patient often refuses it. If the patient be given one-half c.c. of novasurol (which is itself an organic mercury compound and initially introduced as an anti-luetic) dehydration will occur with consequent absorption of C.S.F. into the circulation. If when dehydration is at its maximum (*i.e.* six to eight hours after the intramuscular injection of the novasurol) the arsenical be given intravenously, it will subsequently enter the C.S.F. from the circulation, and produce in a modified way the intention of the Swift-Ellis treatment.

The latter two uses are only suggestions on the part of the author from theoretical considerations, and will be tried out in due time.

THE DIURETIC ACTION OF AMMONIUM CHLORIDE AND NOVASUROL*

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THE beginning of chloride therapy in œdema was in 1911 when Meyer and Cohn[1] observed that infants, to whose feedings calcium chloride had been added, lost weight through loss of water.

In 1918 Schultz[2] treated cases of war nephritis with daily doses of the same salt and succeeded thereby in removing the œdema. Three years later Blum[3] confirmed the results of Schultz and commented on the increased amount of sodium excreted. In his opinion œdema is due to sodium retention, and its liberation, following the administration of calcium chloride, is the result of an antagonism between the two elements culminating in the removal of the sodium after which the kidney is free to eliminate the surplus fluid.

In 1924 Rockwood and Barrier[4] published a further series of four cases, again of nephritis, in which the dropsy was removed by calcium chloride. In the same year Keith, Barrier and Whelan[5] reported two cases of nephritic œdema which, after resisting other methods, yielded to calcium chloride therapy.

In 1925 Gamble, Blackfan and Hamilton[6] reported the results of a study of the diuretic action of acid producing salts, the salts being the chlorides of ammonium and calcium, and the sulphates of ammonium and magnesium. By them it was considered that the diuretic action of these salts was due to increase in acidity of the body fluids and resulting alteration of osmotic pressure values.

Over calcium chloride the ammonium salt possesses three advantages. First it is more highly ionizable. Second, it is less unpalatable. Third, the urea, into which the ammonia is converted, is of itself powerfully diuretic. Both salts are equally efficient in the removal of dropsical effusions.

So far in nearly all the cases reported the œdema has been wholly or mainly due to nephritis. In fact Gamble, setting forth his explanation of the diuretic action of these salts says that his explanation "does not well agree with the fact that non-nephritic œdema may some-

* Read in abstract at a meeting of the staff of St. Boniface Hospital, February, 1926.

times be effectively treated by ingestion of acid-producing salts." Yet, in the case of ammonium chloride, the indication for its exhibition appears to be in the non-nephritic rather than in the nephritic type of dropsy. Considered on purely theoretical grounds, to add the fuel of more urea (urea being the end product of ammonia) to the fire of urea retention, seems inadvisable. Such at least was the argument that deterred us from employing ammonium chloride in cases of nephritis. In the cases here reported renal involvement was slight or absent.

The dose we gave was five grammes three times daily. The drug was dissolved in about four ounces of water, the solution being prepared at the time of administration. In one case (not reported here) the salt was given in capsules, but after a few doses the patient presented the signs of severe gastric irritation. It is better to give the freshly prepared solution. Diuresis begins about twenty-four hours after administration and the maximum output is reached in from four to six days.

As all our cases were cardiac, many of them were fibrillating. These patients were therefore given digitalis for a few days, because, for the production of diuresis, some measure of cardiac integrity is essential, and if the cardiac mechanism be seriously impaired this factor must first receive attention. Indeed the process of removing œdema may be likened to one of syphonage. The water in the tissues is the liquid to be removed, the column of blood represents the fluid in the larger limb of the syphon, while the blood traversing the renal vessels is analogous to the contents of the smaller limb. The ionized ammonium chloride attracts the water into the ascending limb but can do no more. Digitalis, by increasing the contents of the descending limb initiates the flow. Even so, if there be occlusion or narrowing of the mouth of the syphon, syphonage will not occur. Perhaps it is at this point that novasurol exerts its influence.

As for novasurol it was originally introduced as a remedy for syphilis. Chemically, it is the double salt of sodium oxymercuriochlorphenoxylacetate with diethylbarbituric acid and contains 33.9 per cent of mercury. Poelcher and Lange[7] and also Saxl[8] noted (1920) that it rapidly removed the œdema in cases of aortic regurgitation with failing compensation even in cases which had previously resisted all other remedies. Since then its diuretic properties have far exceeded in importance any action it may possess as an antiluetic.

There is doubt, as to where, and how novasurol acts; whether upon the tissues directly, extracting the water and sodium chloride from their colloidal combination, or upon the tubular portion of the kidney, or as an irritant of the glomeruli. According to Saxl and Heilig[9] it is the whole molecule and not the mercury that is responsible for its action. Albumen and casts are not a contra-indication when due to congestion (Schlayer[10]). The two great contra-indications are acute glomerulonephritis and enteritis; its chief indication is advanced cardionephritis with œdema (Neuhof [11]).

Whatever may be its *modus operandi* there can be no doubt, that in dropsies essentially cardiac, the administration of novasurol is followed promptly by a copious diuresis. Elimination of as much as 11,500 c.c. has been reported (Hassencamp[12]). Rowntree, Keith and Barrier[13] consider it to be "one of the most potent diuretic agents ever introduced."

The drug is supplied in ampouls containing 1.2 c.c. of a 10 per cent neutral solution. The dose is from .5 c.c. to 3 c.c. The initial dose had best be small but thereafter 1 c.c. or 2 c.c. may be given intramuscularly at intervals. The interval suggested is from three to seven days, but when there is much œdema and the need for its speedy removal is urgent, the injections may be given daily. The action begins about two hours after administration, but excretion is rapid and the diuretic effect ceases within twenty-four hours. When the indications are less urgent the interval between doses may be lengthened.

As suggested by Burwinkel[14] morning is the best time for administration. In this way the patient's rest will not be disturbed by the drug's activity. As aids to this activity the following have been suggested: strophanthin intravenously (Flesch[15]), digitalis (Hassencamp[12]) and ammonium chloride (Rowntree et al[13]). The patient should be on the Karrel diet.

Novasurol has been employed for the removal of fluid accumulations in divers situations and of sundry causation. Our experience has been limited to its use in cardiac œdema and in hepatic cirrhosis. In two cases of the latter con-

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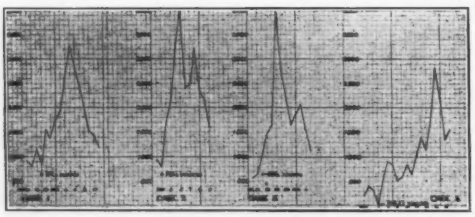
dition we gave it combined with ammonium chloride after the manner advised by Rowntree, Keith and Barrier.[13] In one case the results were excellent. In the other the ascites was not affected. In the cardiac cases the results were usually remarkable and frequently astonishing. Should the œdema re-accumulate and the treatment be re-instituted the effect may be much less pronounced and may even be disappointing.

From the cases treated with either or both of these diuretics five have been selected to illustrate their effects and these have been set forth graphically.

Case 1.—A German farmer of fifty-one entered on November 24, 1924. He complained of dyspnœa (present for four months) abdominal pain (two months) and swelling of the legs and abdomen (three weeks). He had received treatment in hospital for rheumatic fever, for six months in 1904, for four weeks in 1905, for three months in 1917. In 1923 he had failure of compensation, was in hospital for a month and was sent home on digitalis. Examination revealed an enlarged heart, a very irregular pulse, the liver edge two and a half inches below the costal margin. There was marked ascites and the legs and scrotum were very œdematous.

He was placed on Karrel diet and given a total of 180 min. of tincture of digitalis between November 26th and November 30th. Ammonium chloride was given daily from the 29th of November. The maximum output (3,400 c.c.) occurred on December 5th. The œdema had practically disappeared by the 7th, and the ascites by the 10th.



Case 2.—A Canadian farmer entered November 28, 1924. His complaints were: dyspnœa for six months, cough for four months and œdema for two months. He had an enlarged heart, double murmur at the apex, and the concomitant signs of failure—enlarged liver, ascites, massive œdema of legs and scrotum. His pulse was totally irregular.

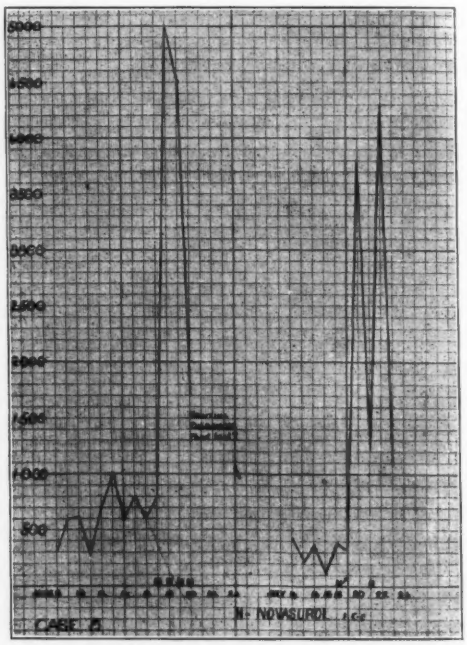
During the first twenty-four hours he received a total of 120 min. tincture of digitalis and thereafter 15 min. every three hours till December 1st. Fifteen grammes of ammonium chloride were given daily from December 1st. Maximum excretion (4,027 c.c.) was on December 4th.

Case 3.—A Polish farmer of fifty had had swelling of the ankles for a year and dyspnœa and anasarca for three weeks. His heart was moderately enlarged. He had pulmonary œdema. The liver edge was felt an inch and a half below the costal margin. The legs were greatly swollen, his scrotum was the size of a grapefruit and his belly was distended with fluid. He was given 60 min. tincture of digitalis followed by 30 min. in six hours and six hours later started on 15 min. doses every three hours. Ammonium chloride was given on the third day and the maximum output (4,000 c.c.) was reached three days later.

Case 4.—This was a Jewess, fifty-three, who had been dyspnœic for three years but much worse for two months. For two weeks her feet and legs had been swelling more and more. There was little enlargement of the heart, a mitral presystolic murmur and auricular fibrillation. The liver was felt to extend an inch and a half below the costal margin. There was much fluid in the abdomen and legs.

She had been getting 15 min. tincture of digitalis for some time previous to April 4th when she was started on ammonium chloride. The maximum output (2,835 c.c.) was delayed for twelve days occurring on the 16th.

Case 5.—An Englishwoman of thirty-three entered with the complaint that she had been dyspnœic for some years and that her feet, legs and abdomen had been swelling for ten days. She had an attack of scarlet fever twenty-eight years ago, rheumatic fever one year ago, and six months prior to the present entry she had been treated for failure of compensation since when she had been taking digitalis regularly.



Her heart was much enlarged. There were mitral systolic and presystolic murmurs, venous pulsation in the neck, enlargement of the liver, much ascites and great swelling of the legs. Her pulse was totally irregular. As she had been on digitalis for so long a time it was decided to discontinue this and give ammonium chloride. Unfortunately the salt nauseated her so much that its use had to be abandoned. After a few days rest digitalis was again given, first a dose of 30 min. and then 15 min. every three hours. On the 16th of the month her excretion was only 600 c.c. On the 17th she received 1 c.c. of novasurol. During the next twenty-four hours she voided 5,000 c.c. The same dose was repeated daily for three days. On the second day she passed 4,500 c.c. On the third day and the day following it was impossible, by reason of the vomiting and diarrhœa, to estimate the amount of fluid she lost; but by the 22nd the œdema was gone from the legs and by the 6th of July she was free from ascites.

She was then given daily a single dose (15 min.) of digitalis. By the 14th however, the œdema had reappeared. By the 18th it had increased considerably and she was voiding only 200 to 500 c.c. a day. On the 18th she was given 1 c.c. of novasurol and the next day she passed 3,805 c.c. of urine. The following day the output fell to 1,200 c.c. and she received a second injection. The figure for the next twenty-four hours was 4,300 c.c.

About this time she developed cellulitis in one of her arms and from this she died a few days later.

Summary

Reasons are given for the use of ammonium chloride and novasurol in cardiac dropsy.

Reasons are given for the simultaneous use of digitalis.

The histories of five cases of cardiac œdema show the effects obtained by giving these drugs.

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TYPES OF THROMBOPENIC PURPURA HÆMORRHAGICA

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THROMBOPENIC purpura hæmorrhagica is a descriptive term used to describe that particular purpura which is associated with a marked lowering of the platelet count. Without taking time trying to classify the various types of purpura mentioned in the literature, it is our intention to deal only with some phases of this kind of purpura defined above, illustrating our remarks by cases showing four somewhat different types of this disease.

Thrombopenic purpura typically presents the following symptom complex.

1. There is a lowering of the platelet count which normally ranges between 200,000 and 400,000. In our series the highest count in which bleeding took place was 78,000. The lowest count was in case 1, the most severe case. In this the lowest count was 12,000.

The following three points are supposed to follow through this decrease in platelets, there not being sufficient present to permit of the blood acting normally.

2. The bleeding time is increased from the normal (average four minutes) to from fifteen to sixty minutes, depending upon the number of platelets present.

3. The blood-clot is non-retractile. There is no separation of the blood-clot in the serum.

4. There is present a capillary resistance test. When a tourniquet is applied about the arm above the elbow, very fine petechiæ appear in a few minutes in great numbers in the skin below the tourniquet. This constitutes a positive test.

5. The clotting-time is normal.

6. The spleen is usually enlarged.

Case 1.—D. K., female, age eleven years. *History.*—Had rheumatism in 1920. Two years later started to attend cardiac clinic for heart damage. In October, 1922, was operated on for removal of tonsils and adenoids. Six days later had a secondary hæmorrhage for which she was transfused. Has been attending the cardiac clinic since that time. Had a head cold most of the summer of 1925. Has had considerable nasal discharge. On October 1st of the same year admitted from clinic because of the appearance of a marked purpura. About one month previous, mother noticed a number of red and blue spots on neck, varying in size from the head of a pin to that of a five cent piece. These have never entirely disappeared. Similar spots have appeared over the surface of the body, particularly the legs where they have been very numerous and irritable. The day before admission a large elevated area, about the size of a raspberry, appeared on her tongue. There were also smaller spots present. Mother volunteered the information that the child bruised easily.

Examination on admission.—There are a moderate number of petechiæ and ecchymoses on the arms and

forearm, neck, upper chest, abdomen, and many on legs and thighs. The hæmorrhages vary in colour from red to purple and in size from 1 mm. to 15 and 20 mm. There are also present a number of bruises varying in size from 10 to 30 mm. in diameter. Besides the large hæmorrhage into the tongue, there are also hæmorrhages into the gums.

The heart showed a chronic endocarditis.

The spleen was slightly enlarged, being one-half inch below the costal margin.

Two days after admission she began to have severe nasal hæmorrhage. At this time the platelet count was 12,800; the bleeding time twenty-five minutes; the clotting time forty-three minutes—position capillary resistance test now — retractile clot. A diagnosis of thrombopenic purpura hæmorrhagica was made. The nasal hæmorrhage continuing, she was given 500 c.c. of blood. The bleeding was controlled for a few days but began again five days later, necessitating a second transfusion. The platelet count continued to remain low varying from 16,000 to 21,000, so that finally one month from the time of the initial nasal hæmorrhage, a splenectomy followed by a third transfusion was done by Dr. R. I. Harris of the surgical staff, whose report is as follows:

"The effect of this procedure was most striking. The hæmorrhages from the mucous membranes and into the skin ceased at once and have not recurred. This has been particularly noticeable in the case of the nasal hæmorrhage which had been continuous from the time of admission. It stopped at once after splenectomy and has not recurred since except at one or two brief intervals and these ceased almost at once. The clotting time remained unchanged. Bleeding time greatly shortened. From small punctures only one drop of blood can be obtained. The platelets rose rapidly and to an extreme height, reaching (1,028,000). Her general health is much improved. This has continued. It is now almost eight months since the splenectomy."

Case 2.—E. P., Italian, female, age fourteen months. *History.*—Sickness began three weeks before admission. Had fever, cough, nasal discharge, cervical adenitis. The latter is tender and fluctuating. One week after beginning of the sickness, a red diffuse rash appeared on her face and gradually spread over her whole body. The rash became papular in character and remained three days. About six or seven days following the disappearance of rash, desquamation occurred. Any doubt about the possibility of this being scarlet-fever was dispelled later when the streptococcus hæmolyticus grown from the abscess in the neck, was proven not to be the scarlet-fever toxin producing stain found in scarlet-fever.

The night before admission bleeding occurred from the nose and right ear. At the same time she began to pass urine, deeply blood coloured. The diaper was found deeply stained every half hour. No blood was passed by bowel. Bleeding from the gums began soon after admission. Numerous petechiæ and ecchymoses appeared. The bleeding time was found to be twenty minutes, clotting time four and one-half minutes, capillary resistance test positive, spleen palpable and platelets 36,000. Diagnosis of symptomatic purpura secondary to infection. Patient was at once transfused from the father whose platelet count was 220,000. Citrate method was used, the child weighed sixteen and one-half pounds, receiving 200 c.c. of blood. The bleeding was controlled for a few hours only, so that within twenty-four hours, transfusion was resorted to again, the platelet count before the second transfusion being only 54,000. A new donor with a platelet count of 228,000 was obtained. At the same time, the suppurating gland was freely opened. Again the patient was better for a few hours, bleeding beginning again within twelve hours. On the four days following the second transfusion, the platelet count ranged from 38,000 to 64,000. As the bleeding was still continuing, although reduced in amount, and as the hæmoglobin by this time had fallen to 40 per cent, it was decided to again transfuse the child. On this occasion a donor with a high platelet count was sought and finally a man with a count of 600,000 was found and used. Next day the patient was markedly better in looks and actions, the bleeding having ceased entirely. During the next few days, the platelet count dropped from 98,000 to 78,000 but with no apparent bad results to the patient who continued to get better and was finally discharged from the hospital. Three weeks from the time of the third transfusion, the platelet count had reached 234,000.

Remarks.—These two cases illustrate the type of case described in the literature as thrombopenic purpura hæmorrhagica. There are about fifty cases reported in which splenectomy has been performed. Case 1, shows the almost miraculous results obtained by operation. Case 2, however, brings up an interesting point which to our knowledge has not been investigated, namely, the bearing of the platelet count in the donor on the result of the transfusion. In the cases reported so far, there is no evidence to prove that any work has been done on the donor's blood except the typing.

In case 2, the first two transfusions were done from donors in which the platelet count was about 220,000. The baby weighed sixteen and one-half pounds and about 200 c.c. of blood was given at each transfusion. Theoretically the baby's platelet count at the end of this transfusion before destruction started again would be about 70,000. Comparing this with the last transfusion which successfully stopped the bleeding, the donor's platelet count being 600,000, the baby's count must have been about 200,000 at the end of the transfusion.

It is just possible therefore, that subsequent work will prove that the correct and sufficient treatment of this condition will be reached by one or more transfusions of blood from a donor, sufficiently rich in blood platelets that the recipient's blood will acquire enough platelets to turn the tide, so that the normal function of the blood will be resumed.

One may perhaps argue that the baby was being relieved of its etiological source by the opening of the abscess in the neck, but the next case bears on this point in that the infection process went on to a fatal termination while the purpura itself was being cured.

Case 3.—R. W., age twenty-one months, male.—*History.*—Had scarlet-fever six weeks before admission to hospital. Two weeks ago had cough, nasal discharge, fever and enlarged cervical glands. For past five days has been drowsy with loss of appetite.

On admission to the hospital, he was found to have

pneumonia and seven days later a diagnosis of empyema was made. A rib resection was done later by the surgical service. During the last two weeks, numerous subcutaneous abscesses occurred. Death took place six weeks after admission.

Two days before the empyema was diagnosed, a rapidly progressing purpura occurred. This appeared first in the right ear which became very tensely swollen and of a deep bluish-black colour. In a few hours, two similar purpuric areas appeared, one on each leg, just above the ankle internally, each being about the size of a ten cent piece. Soon a small area appeared on the scrotum, and on the lower part of the left ear. Finally six hours after the onset into the right ear, the gums and roof of mouth became swollen and the child started to bleed from the mouth. The platelet count was 78,000, the bleeding time was fourteen minutes and the clotting time nine minutes. The child was at once transfused, 200 c.c. of blood (donor Jansky type 1) being given. The bleeding stopped at once. Ten days later the platelet count was up to 225,000 and two weeks later they had increased it to 380,000.

The right ear sloughed away completely and it was some days before the other areas became normal in appearance.

Laboratory findings.—Very little of a positive nature was found at any time. Blood culture, cerebrospinal fluid, Wassermann, tuberculin skin tests, were all negative.

The urine contained albumin, and granular casts on admission but became negative shortly after. The blood showed varying degrees of leucocytosis during the progress of the case and a fair degree of anæmia developed towards the end.

Remarks.—1. As mentioned above, this case illustrates the restoration of the platelet function (bleeding stopped) while the infection process was still progressive; death taking place five weeks after the transfusion which stopped the bleeding.

2. The rapid increase in the platelet count should also be emphasized. Ten days after the transfusion the count was 225,000, and three weeks from the time of the transfusion, the high point of 380,000 was reached.

Case 4.—Baby S., female, ninth day after birth, first child. *History.*—Baby well until the last twenty-four hours when the fingers of both hands and the toes and dorsum of both feet became a dark red colour, the more distal parts turning almost black. At the same time, the skin on the lower end of the radius in each forearm became reddened and inflamed, the areas being about the size of a twenty-five cent piece. There was a thick pus-like discharge from the umbilicus which was slightly reddened and infiltrated. There was a slight elevation of temperature.

The baby lived for one week after admission to the hospital. Both feet and hands became more swollen and darker in colour, giving a typical picture of advancing gangrene.

Laboratory findings.—1. Urine; albumin with granular casts.

2. Blood; white blood cells, 23,000; polymorphonuclears 78; red blood cells, 3,870,000; hæmoglobin 90 per cent.

3. Blood culture; negative.

4. Umbilicus; pus contained, staphylococcus, streptococcus hæmoliticus.

Autopsy findings.—Sepsis of new-born with infection with suppuration of the obliterated hypogastric vessels.

Remarks.—This case was added here because it was thought that the cause of the purpura in this connection might also be found in a lowered platelet count. No evidence exists to prove this to be the case. The presence of infection and the similarity of the type of purpura to that found in case 3 make this suggestion plausible. A second case of this type was seen in which two to three toes and part of the hand became gangrenous and dropped off. They have been previously described as Spontaneous Gangrene by some, and Raynauld's disease by others.

A Source of Cholera Infantum.—The syndrome of cholera infantum, comprising sudden severe diarrhœa with dehydration and collapse, has been found by many observers to occur in the absence of any ascertainable infection of the gastro-intestinal tract, and of any epidemic source of infection. The origin of the disorder has accordingly been referred to as "parenteral," without any definite localization of the focus concerned; it has been held likely that this is a variable factor dependent on local and climatic conditions. Dr. Philip C. Jeans and Dr. Mark L. Floyd have been led by post mortem examinations of unexplained cases to believe that the focus of infection in cholera infantum is most frequently to be found in the mastoid or paranasal sinuses. They do not state, but appear to suggest, that the relation is a constant one, and they are prepared to treat all cases presenting choleraic features in infants by exploration of these sinuses. The six cases which they describe furnish a chain of evidence which is certainly very convincing. In all six cases pus was found in the antrum or sinus, and those in which drainage was established recovered, while those in which it was not established died. Most of the cases occurred not in the summer months when bowel infections are prevalent, but in autumn or winter when the incidence of respiratory diseases is high.—*Lancet*, Sept. 18, 1926.

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RADIUM IN DERMATOLOGY*

By Hugh Mackay, M.D.

Winnipeg

THE observations contained in this brief paper cover an experience of six years in the use of radium. Our supply was limited to a full strength 10 milligram plaque and four steel needles, each containing 12½ milligrams of radium element. There is no emanation plant in western Canada, therefore it was not practicable to explore the wide and varied possibilities in this field of endeavour. Our activities were confined practically altogether to the field of dermatology, a field in which experience has taught us that this remarkable agent is of practical therapeutic utility.

First, then, we have used it for the removal of warty growths, especially when occurring on the face and on the hands. It is particularly valuable in papillomata located about the knuckles, since there is ordinarily an absence of scarring following its judicious use; for the removal of subungual warts also, radium is a remedy of great merit. If these papillomatous growths appear after mid-life they not infrequently undergo malignant degeneration; they are specially dangerous at the muco-cutaneous junction or when they develop on the mucous membrane itself.

Corns.—The pain and discomfort of these lesions are usually relieved and the callosity can generally be removed.

Keloids.—Keloids frequently give rise to symptoms out of proportion to their size. Pain and itching are complained of; these symptoms can ordinarily be alleviated and partial retrogression of the keloidal tissue brought about by the topical application of radium.

Lupus erythematosus—Radium has proved of great service in handling this unsightly and intractable affection. Foci of infection are contributing if not causative factors, and should be eradicated wherever practicable, after which radium may be applied topically to circumscribed patches and the treatment repeated as indicated at intervals of about eight weeks, till involution supervenes. Great care and unlimited patience are necessary in handling these lesions in order that the best cosmetic effects may be obtained. Recurrences may of course take place.

Lupus vulgaris.—This ordinarily failed to respond to radium, with the exception of lupus verrucosus cutis in which satisfactory results were obtained.

Nævi.—Care in the selection of cases and in the exhibition of the remedy brought extremely gratifying therapeutic results. There is a fallacy subscribed to by many of the laity and not a few of the profession, that these lesions should not be treated until after the children reach the age of three or four years. Very early treatment usually prevents an increase in the size of the blemish; besides, the younger the patient the more responsive are the tissues to the application of the radium ray. These lesions commonly fall into four classes clinically: (1) the capillary type; (2) the cavernous type; (3) the port wine stain; (4) the pigmented variety.

The *first* class is responsive to topical applications. A 5 or 10 milligram plaque may usually be depended upon to bring about resolution. The treatments may be given when the baby is asleep; interval between treatments, six to eight weeks.

For the *cavernous* type, radium filtered through 2 mm. of brass held away from the skin one-half to one inch, is frequently effective. A more efficient measure is to introduce steel needles each containing 12½ milligrams directly into the angiomatous mass, giving an exposure of two to five hours; not more than two or three needles are used at any one sitting and the needles are not placed closer than one inch apart. At least three months is allowed to intervene before this treatment is repeated.

The *port wine stain* is a difficult lesion to remove; results were not satisfactory, especially

* Read before the combined meeting of the Pacific Coast and the Canadian Radiological Societies, held in Victoria, B.C., June, 1926.

with the deep-seated type which pressure does not momentarily efface.

Pigmented nævi have an inherent tendency to malignant degeneration. Unless they show signs of activity I think they are better left alone. In any case excision appears to be the best method of attack.

Pre-cancerous lesions of the skin and mucous membrane. — In elderly patients degenerative processes in the skin are often in evidence. Frequently these changes take the form of chronic patches of seborrhœa, senile keratoses, cracks, fissures, or warty excresences. On mucous membrane keratoses are seen from time to time on the vermilion border of the lips.

Leucoplakia is relatively common. According to the dictum of that great clinical teacher, the late John B. Murphy, malignancy developing in this soil is of a specially virulent type. Radium is a valuable remedial agent in combating these pre-cancerous conditions.

Cancer of the skin ordinarily develops on the pre-cancerous background. The line of demarcation between the pre-cancerous and the cancerous lesion is not easy of clinical demonstration. A breach in the continuity of either the skin or the mucous membrane, refusing to heal, signalizes the transition to the malignant phase in the developmental cycle of the neoplasm. Sequeira has pointed out that if a line be projected backward from the ala nasi to the tip of the lobe of the ear, the habitat of the rodent ulcer will be found almost exclusively in the area above this line. In the region about the ears approximately one-third of the lesions belong to this group. The rodent is also met with occasionally on the skin of the upper lip and may extend by continuity of tissue to involve the mucosa of the lip, but lesions developing primarily in the mucous membrane are nearly always the squamous cell type of neoplasm. Lesions developing on the hand are usually the squamous cell type, and when well advanced are best treated by surgical intervention. Radium is the method of choice in attacking the rodent ulcer. It is particularly valuable when these neoplasms are situated in proximity to the eyes. The relative absence of scarring minimizes the danger of ectropion with the likelihood of subsequent disturbance of vision. If either cartilage or bone is involved, surgery offers the best prospect of a cure. The cosmetic effect is hard to equal and cannot be excelled so far as our observation goes, by any other remedial agent at our command.

It must not be forgotten that the injudicious use of radium may occasion embarrassing after-effects. There may be every gradation of radiodermatitis, ranging from a transient hyperæmia to a deep and intractable ulceration, to be followed later by telangiectasia, pigmentary anomalies, atrophy or keratoses, and occasionally by malignant change.

Lastly, we have used radium chloride intravenously in doses of 10 to 50 microgrammes. The cases were of the group found unresponsive to ordinary medication; cases that were unable to care for themselves, constituting a charge on the community. We believe this form of medication has unexplored possibilities for good in so far as the immediate effects are concerned. Of late, however, articles have appeared in the *American Medical Association Journal* casting doubts upon the wisdom of this procedure and claiming by inference at any rate, that grave and even fatal symptoms may be set up in the bones and in the blood stream years after treatment, from the unceasing bombardment of these tissues through deposits of radium salts stored up in the blood-forming organs. Widely divergent views are held by workers in this field concerning the points raised. The problem should be investigated from every conceivable angle and a scientific, unbiased and authoritative pronouncement made on the questions involved.

Case Histories

Case 1.—Baby P.; age seven weeks. Extensive vascular nævus implicating the right side of the face, the nose, upper lip and the ear; spontaneous ulceration appearing behind the ear and under the eye. September 29, 1921, treatment instituted; a 10 mgm. plaque moving applied for one and a half hours. Between that date and December 14, 1923, treated at intervals of approximately two months giving from one to three hours exposures with the 10 mgm. plaque moving; pronounced improvement.

Case 2.—Louise A.; large angioma on the side of the face implicating also the mucous membrane of the cheek, the roof of the mouth, soft palate and uvula. July 9, 1923, two capsules of 1 mm. of brass each containing 25 mgm. of radium were introduced, one on either side of the mass and an exposure of eight hours given. January 20, 1923, this treatment was repeated with one capsule for eight hours. May 22nd three needles each 12½ mgm. inserted for four and three-quarter hours. February 3, 1925, three needles four and one-quarter hours. May 25, 1926, three needles, four and one-half hours. Reduction in the tumour mass followed.

Case 3.—Mrs. R. S. C.; age thirty-six. Lupus erythematosus. Extensive involvement both sides of the face. Treatment begun June 29, 1921, and repeated at about two to three month intervals. A 10 mgm. plaque

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kept moving over involved areas for one to four hours. The last treatment given July 27, 1923. Result, clearing of the lesion; unable to locate the patient at the present time. Face clear when last seen. (See Figs. 1 and 2).

Case 3.—Fig. 1.—Mrs. R. S. C. Lupus erythematosus before treatment.

Case 3.—Fig. 2.—Mrs. R. S. C. After treatment.

Case 4.—Miss M.; aged fifteen. Keloid of the arm developed in vaccination wound; the scar was excised but the lesion immediately recurred. X-ray did not control the condition. Much itching and discomfort. Pain more or less constant; intensified by use of the limb. The lesion was 6 x 3 cm. in the extremes. November 14, 1923, fifty mgm. of radium in a flat 1 mm. brass container applied to six areas side by side. December 26, 1923, treatment repeated, fifteen minute exposures and again on February 13th and April 23, 1924. Pain and irritation were relieved. The lesion is now flush with the skin; no abnormal sensations.

Case 5.—James P.; age thirty-eight. Pulmonary tuberculosis. Went to Ninette Sanitarium, January 18, 1924, because of lupus verrucosus cutis of the dorsum of both hands; had Alpine lamp, quartz lamp and x-ray treatments; response unsatisfactory. Pain in the limbs constant and distressing. June 25th, radium treatment begun, 50 mgm. filtered with 2 mm. of brass and half

Case 7.—Fig. 3.—J. M. Epithelioma before treatment.

Case 7.—Fig. 4.—J. M. After treatment.

inch of wood, applied to fifteen areas, each one and one-quarter inch in size, and an exposure of one and one-half to two hours given each square. Treatment repeated

September 16th and 17th, and on December 14th. Left hand entirely healed. April 1, 1925, treatment repeated two to three hours. Both hands have been perfectly well for over a year.

Case 6.—T. J. F.; age forty-two. Rodent ulcer inner canthus of the left eye. The lesion indurated, 1 cm. in diameter. October 18, 1921, a 10 mgm. plaque of radium was applied for three hours. December 22, 1921, and January 5, 1922, 25 mgm. in 1 mm. of brass and 2 mm. of rubber applied for three hours; healing took place. No recurrence.

Case 7.—J. M.; age sixty-one. Epithelioma of the side of the face, in front of the ear, made its appearance nineteen months ago, deep ulceration. April 25, 1924, four radium needles each containing 12½ mgm. introduced circling the growth. A five hour exposure given. Healing with a depressed scar ensued. No recurrence. (See Figs. 3 and 4).

PROSTATISM

A Brief Survey and Report of One Hundred Cases

By Emerson C. Smith, M.D.

Edmonton

THE aim of this paper is to present the generally accepted facts on the condition of prostatism, and to summarize the present day knowledge of the diagnosis and treatment of this very common disease.

Prostatism is a term designating an adenomatous or sclerotic condition of the prostate causing obstruction to the outflow of urine through the urethra: (Keyes)—It occurs in between 15 to 20 per cent of men over the age of sixty years, and the only treatment of value is the removal of the obstruction. There is no known cause of this condition. A common statement made is that prostatism does not occur in Catholic Priests; this in my experience is not true, as I have seen two such cases.

Diagnosis.—The history is usually quite definite and clear cut. The primary symptom in the great percentage of cases is night frequency of urination. This is later followed by day frequency, a small urinary stream, that is hard to start; loss of force of the urinary stream and, in time, acute retention of urine. There are many accessory symptoms caused by complications, such as dysuria, hæmaturia (this occurs much more frequently in benign hypertrophies than in carcinoma of the prostate) and foul urine. Pain in the back, perineum and suprapubic region, due to back pressure, and foul breath, dry tongue, headache and general ill-health, due to accumulation in the blood of the nitrogenous end products.

Physical Examination.—The general rule in making a diagnosis holds true here as elsewhere. From your examination gain a complete knowledge of the patient's condition, both local and general. Oft-times, there are co-existing pathological conditions that alter entirely the prognosis and treatment, and may prohibit any attempt at radical interference. Our usual routine is a complete physical survey by an internist, with special care given to the heart, lungs and mouth.

Urological Examination.—A careful analysis of a twenty-four hour specimen of urine gives considerable information. A rough and ready estimation of kidney function is derived from the specific gravity, and especially by the difference in the specific gravity between the day and night urine. The presence of pus in the urine, indicating, of course, genito-urinary infection, is important. This is one time when an existing infection is to be desired; the reason is that a prostatectomy cannot be done at present without subsequent infection. This infection occurring post-operatively with the patient at the low point of resistance is often fatal. It is impossible to persistently catheterize a patient for any length of time without infection ensuing. The aim is for the patient to become infected and develop an immunity before removal of the prostate.

Renal Function.—With the methods at hand an exact estimation of the kidney function may be obtained by (*a*) a phenolsulphonphthalein test: normal output is 50 per cent for the first hour, 25 per cent for the second hour; the minimum output in a prostatic patient should be above a 20 per cent total for the two hours: this rule is by no means absolute. (*b*) Blood chemistry: particular emphasis is laid on the non-protein nitrogen, urea and creatinin content of the blood.

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One wishes to see the urea below 35 mgm. per 100 c.c. of blood; and the creatinin below 2 mgm. per 100 c.c.; once again this is not absolute. Each should be done as a check against the other; the blood chemistry is the more accurate and important.

The blood pressure findings should be carefully followed. A low blood pressure 115 systolic down, meaning generally myo-cardial degeneration is very important, and is a dangerous finding. A high blood pressure is not quite so important.

Rectal Examination.—Attention is paid to the size, shape and consistency of the prostate, and whether or not it is fixed or nodular. The chief knowledge derived by a rectal examination is whether or not the prostate is malignant. Prostatic obstruction cannot be diagnosed by rectal examination.

The introduction of a soft rubber catheter to the bladder gives a great deal of information. It rules out a urethral stricture and shows if there is any alteration in the prostatic urethra. By determining the presence and amount of residual urine, the degree of obstruction to the outflow of urine is indicated.

Cystoscopy.—By this method is determined the exact type of the prostatic obstruction. We obtain an indication as to the operation of choice in the particular case. By cystoscopy we remove the operation from a blind procedure to a definite scientific surgical undertaking. The bladder at the same time may be more completely investigated than is possible by a cystotomy. Bladder tumours, diverticulæ and calculi, etc., are discovered.

Differential Diagnosis.—The following conditions must be borne in mind and ruled out: (*a*) Chronic interstitial nephritis; (*b*) renal tuberculosis; (*c*) pyelonephritis; (*d*) urethral stricture; (*e*) tabes; (*f*) spinal cord bladder; (*g*) vesical calculi.

Pre-operative Preparation.—The pre-operative preparation consists in getting the patient in the best possible condition to withstand the surgical trauma to which he must be subjected:

1. The "back-pressure" on the kidneys, which is the most important damage caused by the obstructing prostate must be relieved. There are two ways in which it may be done: (*a*) A urethral retention catheter; (*b*) suprapubic drainage. In a well equipped and well managed urological service the first is the method of choice, and a large percentage of patients tolerate a retention catheter. However, some do not, and these cases must be drained suprapubically. *The "back-pressure" must be relieved.* Repeated phenolsulphonphthalein and blood chemistry tests record the improvement in the kidney function which follows, until normal or nearly normal findings are obtained.

2. *Elimination.*—Plenty of fluids must be given. Five thousand c.c. intake daily, is desired. Water is given by mouth, salines by rectum or subcutaneously. The bowels are regulated and the patient is thus "detoxicated."

3. *Urinary Antiseptics.*—Urotropin is administered to the extent of ten grains three times a day after food. If the patient is running a persistent febrile course due to genito-urinary infection, 5 c.c. of mercurochrome intravenously will probably control it.

4. *Surroundings.*—A bright, cheery, warm ward with an efficient nursing staff to keep the patient in good spirits. A well trained male-nurse is invaluable.

The choice of time for the operation is one of the fine points of surgical judgment. There is no single sign, symptom or laboratory test that gives this information. One must weigh the "pros" and "cons," and then use his judgment, gained by experience. The day preceding the operation, 20 c.c. hæmostatic serum is given intramuscularly, to increase the clotting time and thus diminish bleeding. The patient having been brought to the best possible physical condition, the choice of operation is made. There is a choice of three operative procedures.

1. *Suprapubic.*—The operation is a one stage or two stage prostatectomy depending on whether the patient has tolerated a urethral catheter.

2. *Perineal.*

3. *Intra-urethral.*

Controversy has waged for years as to the merits and demerits of suprapubic and perineal prostatectomy. It is reasonable to say that there is no one operative procedure for all cases. Each case is a law unto itself and must be treated individually. The suprapubic gives a higher percentage of good functional results. There are certain definite indications for a perineal prostatectomy: (*a*) A very fat abdominal wall; (*b*) a dense urethral stricture as a complication; (*c*) a sclerotic prostate; (*d*) a sclerotic prostate with calculi. The intra-urethral manipulations are very successful in certain cases. A median bar obstruction can be removed completely—our method is to use a "Youngs" or a "Braasch"

Punch and then fulgurate the bleeding points. "Caulks" cautery punch has given good results.

Anæsthesia.—The anæsthetic to be employed is of great importance. Remember the prostatic patient is a poor surgical risk at best, and stands general anæsthesia poorly. The choice in our routine cases lies between gas and oxygen or local and sacral. The nervous patient is given the former and the quiet phlegmatic patient, the latter. Spinal anæsthesia has given good results in the hands of some surgeons. Ether is used very rarely and chloroform not at all.

Post-operative Treatment.—The two chief dangers following prostatectomy are uræmia and hæmorrhage. *Uræmia,* is much easier prevented than treated. The patient must be kept warm and comfortable, fluids must be given freely; water by mouth and salines per rectum, subcutaneously or intravenously. Do not let the patient become dehyrated. Fluids and warmth spell prevention. *Hæmorrhage* is one of the greatly feared complications, and various attempts are made to prevent it, such as: (*a*) tying the bleeding points and suturing the capsule; (*b*) hydrostatic bag placed in the prostatic bed; (*c*) packing the prostatic bed with gauze. In our opinion hæmorrhage (excessive) usually bespeaks of an improper enucleation of the prostate. I followed closely a series of 300 cases in Dr. MacKenzie's service in the Royal Victoria Hospital, in Montreal, and in no single case was the bleeding deemed sufficient to call for intervention. In our series of 100 cases the same holds true. Provide for free exit of clots by a large Freyer tube, and have the clots removed every five minutes, by the nurse in attendance, until the bleeding ceases. Epididymitis occurs as a post-operative complication. It is not necessary to tie off the vasa before the operation, but great care is taken that there is always a scrotal support. If persistent vomiting occurs, an early gastric lavage often averts serious trouble. The patient is propped up in bed the following day and is kept up. On the fourth or fifth day the patient is placed in a wheel chair daily, by so doing hypostatic pneumonia is averted. The bladder is irrigated on the third day and then daily. A urethral sound is introduced on the tenth day and irrigations per urethra are commenced and given every second day. Before the patient is discharged a cystoscopic examination is done to make sure that there are no vesical calculi or sloughs remaining in the bladder.

The following is a brief summary of 100 consecutive cases:—

Average Age	62	
Oldest	88	
Youngest	51	
Operation:		
Suprapubic—one stage	20	
Suprapubic—two stage	69	
Perineal	5	
Intra-urethral	6	
		100 cases
Pathological Condition;		
Adenoma	81	
Sclerosis	19	
		100 cases
Average Stay in Hospital:		
One stage	38 days	
Two stages	41 days	

Mortality: Four cases (4 per cent) of which one case was due to acute gastric dilatation; one case to myocardial failure; and two to pneumonia.

In 1924, when Mars was closer to the earth than it had been for many years, elaborate studies were made of it, so that now it is possible to state that it has the necessary conditions for life as we know it. As large green areas on the planet can be seen to change with the Martian seasons, Dr. Russell thinks it probable that there is vegetable life on the planet.

As for the so-called canals, Professor Russell disagrees with opinion that the marks are mere optical illusions, for he declared that actual photographs had been made of them at the Lowell Observatory in Arizona. "The marks are there," he said, "but they may not be thin straight lines as they have sometimes been represented."

"There is probably vegetable life on Mars, but the presence of animals and intelligent beings is not proven." With this "Scotch verdict," Dr. Henry Norris Russell, professor of astronomy at Princeton University, summed up what scientists think of the question as to whether or not Mars is inhabited, in an address before the American Astronomical Society, meeting at the Maria Mitchell Observatory.—*Science Supplement,* Oct. 8, 1926.

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THE TREATMENT OF HÆMORRHOIDS

By W. E. M. Mitchell, M.C., M.B., B.S. (Lond.), F.R.C.S. (Eng.),
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IN the rational treatment of any condition correct diagnosis is the first essential. Second to diagnosis only in importance is a correct conception of the pathological process at work in the production of the lesion in question. These two fundamentals are clearly to be kept in mind in considering the problem of hæmorrhoids or piles.

In reviewing any considerable number of cases of this condition, the reviewer will be struck by the infrequency with which any exciting cause is found. Because many people with piles are constipated, it does not follow that their trouble is due to constipation. In many cases the constipation is a sequel to the development of piles, and was previously unknown to the patient.

The cause of piles will often be undiscoverable by the ordinary methods of examination. This, however, does not absolve the surgeon from the duty of examining the whole patient with that thoroughness which his training has inculcated. On the contrary, it is on account of the occasional discovery of a serious lesion responsible for the hæmorrhoids that the surgeon's responsibility in the matter of complete investigation is here emphasized, and the danger of complacency and slipshod diagnosis insisted upon.

In the complete examination of a patient complaining of piles, the following points will merit special attention:—

1. A history of constipation.
2. Symptoms or signs of irritation of the lower bowel. Such as the irritation occasioned by worms, rectal polypi, etc.
3. Symptoms and signs of inflammation of the lower bowel, e.g., colitis, proctitis, dysenteric or non-dysenteric.
4. Signs of valvular disease of the heart or of failure of cardiac compensation.
5. Abnormally high blood pressure.
6. Hepatic cirrhosis.
7. Displacements of the uterus; pelvic tumours.
8. Carcinoma of the rectum.
9. Any condition that might obstruct the venous return from the internal hæmorrhoidal plexus to the heart; *e.g.*, thrombosis, or pressure on veins by inflammatory or neoplastic masses.

Should one or more of the conditions included in this list be found, then treatment will of course be directed to its alleviation, and symptomatic treatment only of the piles will be required while the underlying cause itself is attacked.

As we have mentioned, however, the examination for the discovery of such an underlying cause will often prove negative, and then we are forced to confess our pathological ignorance by ascribing the disease to "idiopathic dilatation of the terminal veins of the internal hæmorrhoidal plexus," or more simply, "congenital weakness of the veins or of their supports." It is with these cases in which no cause can be found to account for the piles that this article deals, and with whose treatment the following outline is concerned. The treatment of hæmorrhoids may be divided conveniently into three stages:

1. Palliative treatment.
2. Treatment by injection.
3. Operative treatment.

Whether one or all of these may be called for depends on the nature and severity of the particular case.

Palliative treatment.—This is suitable chiefly as a preliminary to further treatment, and a thorough trial of this method will often cause such a remarkable improvement in a given case that the patient may feel cured, and be unwilling to submit to another examination. On the other hand, from the surgeon's point of view, it may produce such a change that further treatment by injection only may be sufficient for the cure of a case in which it appeared at first that operation was indicated.

The palliative treatment consists of:

a. Careful regulation of the bowels by liquid paraffin. It may be necessary to supplement the oil with a soap enema at first.

b. The manual reposition with the vaselined

finger of any prolapsed piles which do not recede spontaneously within the external sphincter after defæcation. Careful watch lest prolapse recur, and its immediate reduction when necessary.

c. The thorough cleansing of the anus and surrounding skin with tepid water and soap using swabs of cotton wool after each motion of the bowels.

d. The complete drying of these parts with cotton wool.

e. The free application to the parts of calamine lotion* on a large piece of boric lint which is kept in position by a T-bandage till the bowels are next open.

f. The repetition of this procedure for one week, taking care to drink sufficient water, eat green vegetables, etc., and restore the tone of the abdominal muscles by exercises in the effort to avoid constipation.

When the above régime has been faithfully followed for seven days, the patient's condition improves as far as can be expected without having recourse to more drastic measures, and the surgeon can then decide finally whether the case can be dealt with by injection, or by operation.

It is unwise to express an opinion as to whether injection will be sufficient, or whether operation will be required till this palliative treatment has been carried out thoroughly for the period mentioned.

Treatment by injection.—Cases suitable for treatment by this means are those with the following types of hæmorrhoids:

1. Piles whose base of attachment is not wider than their greatest diameter, and which are neither thrombosed nor inflamed.

2. Each pile is separate and distinct, *i.e.*, there is no general prolapse of the pile-bearing area.

Prolapse of piles included in the two preceding categories is no contra-indication to treatment by injection if the patient can be trusted to reduce the prolapse whenever it occurs. Bleeding is no contra-indication in the same circumstances. A pile usually ceases to bleed after the first injection.

From what has been said, it will be seen that unsuitable cases will include those in which:

a. The piles are confluent, and there is no distinct pedicle to each.

b. The whole pile-bearing area prolapses outside the external sphincter.

c. The piles are thrombosed or inflamed.

Technique.—In the account that follows, the instruments and technique of the late Mr. Graeme Anderson are described†.

The patient lies on the left side, left hip on a sand bag, the right thigh flexed on the abdomen. The well-lubricated, warm proctoscope designed by Mr. Graeme Anderson is then introduced, and with it an accurate survey is made of the anal canal and pile-bearing area. The results of this survey are best recorded graphically for each case in a simple diagram. Most commonly three piles or groups of piles will be found, one anteriorly, and one on each postero-lateral aspect of the wall of the anal canal. The piles are then cleansed with swabs soaked in aqueous solution of biniodide of mercury (1 in 1000), and dried. The special syringe (described in the article referred to above) is then filled with phenol 10 per cent in water, and the needle inserted into the pile at a point above the level of the anal valves. Above this level; but not below it, there is no sensation of pain on pricking the modified mucous membrane, and the patient should be unaware of any painful sensation as the needle enters. The needle penetrates for a depth of half an inch, and it is checked when it has penetrated thus far by the shoulder on its side which prevents its further passage except by invagination of the pile. The point of the needle should reach the base of the pedicle of the pile, and it should be remembered that the little artery passing into the pile comes downwards from the superior hæmorrhoidal, and that the terminal veins pass upwards alongside the artery; therefore the point of the needle is directed to the highest part of the base of the pile. The piston of the syringe is now gradually compressed till eight minims of the phenol solution have been introduced. The needle is then quickly withdrawn. In the majority of cases no bleeding follows; sometimes a trickle of

* The following prescription from the Pharmacopœia of St. Bartholomew's Hospital is suitable, ℞ prepared calamine and zinc oxide of each 30 grains: dilute solution of subacetate of lead and glycerin of each one fluid drachm: lime-water sufficient to make one fluid ounce.

† *Brit. Med. Jour.*, July 19, 1924, p. 100.

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arterial blood escapes; but this ceases spontaneously and never causes trouble. Not more than two large, or three small piles should be injected at one time.

The patient then continues the régime described under palliative treatment for another week, and presents himself for a second injection. This is carried out as described above, and a record of the progress is made.

The number of injections necessary to secure complete disappearance of the piles may be six or more; often, however, three or four injections complete the cure.

The permanence of this cure is still uncertain. In my experience, there has been no recurrence after two years in suitable cases treated by this method.

Operative treatment.—The operation recommended is that known as "ligature and excision." With the details of the pre-operative preparation, and with the post-operative treatment, it will be unnecessary to deal here. As far as the operation itself is concerned, two points may be noted.

1. Forcible dilatation of the sphincters is unnecessary.

2. The isolation of the pedicle for ligature is best accomplished by dividing the modified skin of the anal canal with scissors at the level of the lowest point reached by the base of the pile with scissors. Then, with the same cut, the pile is separated from its lower attachments by cutting through deep to its base in such a way that the blunt points of the scissors meet in the submucous layer of the anal canal at a point level with the top of the pedicle of the pile, and deep to its vessels. This procedure results in very little hæmorrhage, and the isolation of a definite small neck containing the leash of vessels of the pile.

The other points in the operation are too well known to require further description here.

Summary

The concerted effort to discover an exciting cause for the hæmorrhoids is the prime essential before applying any method of treatment. Digital, proctoscopic and sigmoidoscopic examinations are required in every case.

In cases in which no cause for the condition can be found:

1. Treatment by palliative measures such as those described above must always be carried out for one week before a decision as to the next step in treatment can be made.

2. Certain patients, whose piles are of the types described, can be efficiently and painlessly treated by injection without interference with their ordinary modes of life.

3. The permanence of such cures is at present uncertain.

4. All other cases require operative treatment, and the operation recommended is "ligature and excision."

Insomnia.—Professor Ranschburg gave an address recently before the Congress of Hungarian Internists on the pathology and therapeutics of insomnia. He said that recent researches have confirmed the assumption that the sleep centre is in the region of the third cerebral ventricle. In man this centre learned to subordinate its periodic activity to the organ of mental functions. Thus, the thought of falling asleep soothes ,and the fear of not being able to sleep inhibits, the automatism of this centre. Study of the depth of sleep in persons with refreshed and with exhausted nerves proved that sleep and wakefulness are not antagonistic conditions, but transitions; wakefulness passes through drowsiness, dreamful dozing to deep and unconscious sleep. In some cases a patient complains of having been awake all night, while those round him state the contrary. The fragments of the ego of the dozing person were vigilant, while the preponderant part of the cerebral cortex was resting or sleeping. Such persons will never suffer from lack of sleep, but they will not feel refreshed. The causes of insomnia are chiefly disorders of the nervous system and bodily pain. Physical and climatic treatment is of the first importance. Judicious use of sedative drugs may be valuable and without danger, while with improper use they become inefficacious and detrimental. Diet and a daily regimen is important. A regimen based on the condition of the individual patient is the method of choice.—London Correspondent, *Jour. Am. Med. Ass.*

Case Reports

MENINGO-ENCEPHALITIS; OPERATION: RECOVERY

By Alexander Gibson, F.R.C.S. (Eng.)

Winnipeg

Cases of meningo-encephalitis which are amenable to surgical aid must be of sufficient rarity as to be worthy of record.

J. B., aged fifteen, schoolboy, was referred by Dr. E. A. Shaw of Moose Jaw on March 21, 1926. He complained of intense headache since March 9, 1926, convulsions since March 19, 1926.

Previous illnesses.—Has always been healthy. Plays games. Takes food well. Does work well. Has taken a good place at school. On March 5, 1926, had an attack of measles. He was in bed for three days; was out of bed for one day; has not been out of bed since March 9th. Headache has not been very severe until the last day or two. Temperature ranged from 102° to 104° while headache was severe. On March 19, 1926, the first convulsion occurred. It is said to have lasted about one minute. The boy did not lose consciousness. His father states that all the muscles were contracted and that the patient "shook all over." From the onset of the fits, until present time he has had about ten fits. Each lasted for about one minute. He has always been conscious during the convulsion, has not passed urine, has not bitten his tongue. During the last twenty-four hours, patient has known when the fits were coming on: he feels movement in the left foot. This seems to go "up and down." Each convulsion leaves him much exhausted, and there is marked perspiration.

On admission temperature was 98.2°. Pulse 80. The facies was distinctly listless, the left arm was somewhat limp, voluntary movement of the left lower limb was poor and feeble. Patient was unable to stand upright; he tended to fall to the left. The pupils were somewhat dilated, equal, reacted to light and to accommodation. Movements of the eyes were unimpaired, corneal reflex present. Definite weakness about the left side of the mouth with doubtful weakness in left forehead. Hearing unimpaired. Intelligence unimpaired.

There was no disturbance of sensory functions as tested by cotton-wool and pin-prick. Plantar reflex was extensor on both sides. Ankle clonus was present on both sides, the left being more marked than the right. Knee jerks were present, not exaggerated on either side. Patellar clonus absent both sides. Cremasteric reflex present. Abdominal reflexes absent both sides. Rebound phenomenon left arm. Finger to nose test, left less accurate than right. Dysdiadokokinesis left side. Movements very much slower than on right side.

Examination of thorax and abdomen negative. Teeth normal. Throat slightly congested. Pus present in naso-pharynx.

Patient was examined by Dr. T. Turnbull who suggested x-rays of the accessory sinuses but found no acute condition which might be primary to intra-cranial abscess. The x-ray report was as follows:—

Sinuses.–The left antrum, ethmoids and frontal are cloudy.
Mastoids.—The right mastoid has somewhat of a necrotic appearance.
The examination of the urine showed no abnormality. The leucocyte count was 16,500.

The patient was seen by Dr. A. T. Mathers. He carried out lumbar puncture and examined the eye grounds. There was no obvious change in the fundus. The report on examination of the cerebro-spinal fluid was:—

Cells.—Six lymphocytes.
Globulin.—no increase.
Sugar:—.06 gms. per 100 c-c. of fluid.
Colloidal gold.—negative.
Wassermann.—negative.

During the remainder of the day (March 21st) patient had five seizures at 11 a.m., 1 p.m., 6.30 p.m., 8.45 p.m., and 12 p.m. Diaphoresis was so free that the night-gown had to be changed. Temperature did not reach 99°, and apart from the convulsions, the pulse was not very rapid.

On the morning of March 22nd Dr. Mathers again saw the patient, and arranged to have him seen also by Dr. Charles Hunter. Throughout the 22nd, the patient had fits at 5 a.m. and 8.30 a.m., three minutes each at 10.30 a.m., four minutes, and at 11.50 a.m. This last was a very severe one lasting seven and one-half minutes; following it, the boy was much exhausted. At 2 p.m. a fifth seizure occurred, a sixth at 5.30 p.m., lasting five minutes, and a seventh at 8.30 p.m. quite violent, and lasting five minutes.

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Dr. Mathers' Report

This patient presents the following:—

(*a*) Left sided Jacksonian attacks.
(*b*) " " hemiparesis.
(*c*) " " asynergia and adiadokokinesis and rebound phenomenon.
(*d*) " " seventh nerve paresis of cerebral type.
(*e*) " " absence of abdominal reflexes.
(*f*) " " astereognosis—doubtful.
(*g*) General increase in tendon reflexes with bilateral ankle clonus and definite right Babinski; left Babinski doubtful.

The predominance of cerebellar symptoms suggests a left cerebellar lesion, but I cannot link up with this the other signs and symptoms that suggest a right cerebral lesion, *viz.*, the Jacksonian attacks and facial paresis. Pressure on the pyramidal tract could produce the hemiparesis, but I do not believe it would produce the convulsions, and certainly not the seventh nerve paresis of cerebral type. It seemed to me doubtful that the lesion was in the posterior fossa.

On the other hand, all the signs and symptoms could be accounted for by a lesion well forward in the right cerebral hemisphere involving the pyramidal and, to some extent, the sensory tracts and, in addition, the frontopontine association tract which passes subcortically from the frontal lobe to the pons on the same side, is relayed at the pontine nuclei, crosses the mid-line and passes to the opposite cerebellar lobe *via* the middle peduncle. A lesion on the right side of the pons might account for all the signs and symptoms except the convulsions. The spinal fluid is essentially negative; also the eye grounds. Meningeal and encephalitic processes seem to be excluded. The most likely explanation seems to be abscess, right cerebral, subcortical, near the mid-line in the region of the motor area.

Dr. Hunter's Report

"I think that one can practically exclude left cerebellar lesion in favour of a right subcortical lesion in the region of motor-sensory area near the middle line above. With the very acute history, abscess would seem very probable. I would advise immediate operation over the right sensory motor area close to the middle line. *March 22nd—7 p.m.*"

In view of the opinion expressed it was decided to explore the upper Rolandic region, the pre-operative diagnosis being cerebral abscess—primary cause unknown.

At 9 p.m., March 22nd, operation was undertaken. A trephine circle was removed over a spot corresponding to the leg motor area. The dura bulged into the trephine hole. The trephine opening was enlarged, but there was no general bulging of the dura. After removal of the bone the appearance of the dura was that of a smooth surface with a nipple-like projection corresponding to the area underlying the trephine circle. A flap of dura was reflected, and a spot or two of what looked like pus was seen. A culture of this was taken and also a smear. The cortex underlying this area was explored but no abscess was encountered. The wound was sutured and the patient returned to the ward in good condition.

The report from the pathological department was as follows:—

Culture.—No growth on three media.

Smear.—A few polymorphs, lymphocytes and large mononuclears. No organisms.

Further progress.—At 6.30 a.m. on the morning of the 23rd the patient had a seizure lasting about three minutes. At 6.10 p.m. another occurred. At 5 a.m. on the morning of the 24th there occurred a mild spasm lasting only a few moments. This proved to be the final convulsion. From this time onwards, improvement was steady. On April 5th he was up in a chair and on April 8th he was able to walk without any tendency to fall. Romberg sign was negative. On April 12th he was discharged from hospital. On May 12th he was readmitted and the hole in the skull was obliterated by a graft from the tibia. This procedure was devoid of incident, and he returned to Saskatchewan on May 21st. A letter from his father of date of August 8, 1926, says: "Jim is fine, both head and leg as good as before."

In view of the fact that the fits had continued from March 19th until the time of operation, and that they ceased in less than twenty-four hours after surgical interference, it seems reasonable to suppose that the opening made in the dura was fortunate enough to be exactly over the "storm centre" of the infection. Pathologically, the condition was not a typical meningitis, neither was it a typical encephalitis, yet there was a cellular exudate in the pia-arachnoid overlying the cortex and the symptoms pointed to a subcortical lesion. It suggests hedging to describe the condition as meningo-encephalitis of uncertain origin, but what else can it be called?

A CASE OF AMAUROTIC FAMILY IDIOCY*

By R. R. MacGregor, M.D.

Kingston, Ont.

Baby was the first born child of Jewish parents; the labour was normal and the family history negative.

The infant was first observed at three months. It was being fed at the breast and appeared normal. At the age of five months the infant could sit up with support, held its head erect and played with bright coloured toys. From birth until this time there had been a steady average gain in weight, and nothing unusual

* Read at the fourth annual meeting of the Canadian Society for the Study of Diseases of Children, Gananoque, June 11, 1926.

about the infant was noted. After that time the mother observed that the infant did not seem to see objects held in front of its eyes and did not reach for the bottle held towards it as usual.

The infant was again seen at nine months. It could not sit up and was quite apathetic and did not appear to notice objects held in front of it. There had been little gain in weight for the past two months. The infant was sent to ophthalmologist for eye examination and the following report was received.

Report.—The fundus examination shows in each eye a greyish white zone in the macular region with a dark red brownish or cherry red spot in the centre. The optic disc is slightly paler than normal, suggestive of atrophy. This affection of both eyes coupled with the general clinical features establishes a definite diagnosis of amaurotic family idiocy.

Since that time there has been a progressive mental deterioration with the development of total blindness and physical retrogression. At eighteen months the infant had wasted considerably and was having several mild convulsive seizures daily.

The infant is now twenty-two months old, is in a state of marasmus, and it is extremely difficult to give enough food to nourish the child. The jaws are held tightly shut and only opened with considerable force and difficulty, and food placed in the mouth is not readily swallowed. The convulsive seizures have lessened in number and degree of severity. A slight spasticity is apparent in the limbs and the reflexes are somewhat exaggerated.

Retrospects

ON SPASTIC PARALYSIS AND ITS TREATMENT

By J. A. Nutter, M.D.

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Spastic paralysis is a most distressing affection of the new-born child, causing deformity and stiffness and usually accompanied by mental deficiency. The typical picture is a most moving one, a clubfoot child with crippled hand and vacant mind. Ribera, the great Spanish master, painted long ago the figure of such a child. It is called "The Clubfoot" and hangs in the Louvre. The cause of the crippling is brain injury or disease, and the use of forceps at birth is blamed for many cases. The paralysis is, strictly speaking, an exaggeration of muscular tone and loss of control through stiffness rather than loss of power, and may be hemiplegic, paraplegic or even involve all four limbs. The last are usually frank imbeciles with congenitally undeveloped brains. As a result of the loss of cerebral inhibition the crippled limbs are extraordinarily stiff and show greatly increased reflexes. In the leg the deformities yield fairly well in selected cases and the stiffness may not be of first class importance, It is in the arm and above all in the fingers that the terrible spasm is so disastrous, the finer and quicker movements of the hand being only too often gone beyond repair. Such are the terrible results of damage to the brain. In an attempt, feeble as it may be, to salvage the shipwrecked body the child is painstakingly taught rhythm and balance. Muscles are trained where possible, while the numerous contractures are stretched or cut. All too often the deformities return on the removal of brace or plaster cast. In an effort to overcome the baffling stiffness the central nervous system was attacked. In 1907 Foerster proposed to divide the posterior nerve roots and so upset the reflex arc on the sensory side in an effort to lessen the stiffness. Nerves had previously been rendered functionless for months by alcohol injections, but in 1911 Stoffel proposed to actually destroy part of the motor nerve supply to over-acting muscles. It is a question whether these operations are justifiable, and most surgeons restrict themselves to procedures directed against the muscles, with re-education following. The results even in selected cases, however, have been by no means brilliant.

Royle and Hunter[1] announced an operative cure for the stiffness of spastic paralysis. They revived the old theory of a dual nerve supply to skeletal muscle, bringing forward experimental findings in support of their claim that the cerebrospinal nerves controlled voluntary contraction of muscle, while the sympathetic nervous system

was in control of the automatic maintenance of posture or plastic tone. The stiffness of spastic paralysis was, therefore, due to sympathetic overaction, and could be lessened or removed by sympathetic removal. Royle performed many operations for the relief of spastic paralysis and some of his cases were benefited thereby. Many other surgeons attempted it, but with negative results. For some time failure was thought to be due to an improper selection of cases, but finally much criticism arose at the lack of success. This led to greatly increased interest in the study of the sympathetic nervous system and a reviewing of muscle physiology. The question of muscle tone in particular came in for serious investigation, and old experiments were repeated. Royle based his operation, it will be remembered, on the theory of a dual nerve supply to skeletal muscle. He was led to this presumably by the observation of Boeke[2] in 1911 that skeletal muscle fibres were apparently innervated by sympathetic as well as by cerebrospinal nerve fibres. (Cobb quoted by A. Forbes *et al*[3]). This observation naturally led to a search for the functional significance of the sympathetic fibres, and on cutting these in frogs De Boer[4] found, as he thought, a loss of tone. On the strength of these observations Langelaan[5] built a theory that "contractile tone" (by which the limb assumes a posture) depends on the cerebrospinal nerve fibres, and "plastic tone" (by which the limb maintains a posture already assumed) depends on the sympathetic fibres. Langelaan cited Sherrington[6] in support of his views. Royle and Hunter, assuming Langelaan's theory to be valid, devised their operation of sympathetic ramisection, by which the stiffness or plastic tone in spastic muscles was to be removed, leaving voluntary movements unimpaired. Their own experiments they considered bore out this theory. On the other hand Kuno[7] repeated De Boer's experiments and found that division of the rami communicantes on one side in twenty-two frogs did not produce any change in muscle tonus. Langley[8] pointed out that stimulation of the sympathetic trunk has no effect on striated muscle except to decrease its use of oxygen. He also insisted that conclusive evidence is entirely lacking that any slight loss of muscle tone resulting from sympathectomy is not the result of section of vasomotor nerves and consequent vasodilatation. Kanavel, Pollock and Davis[9] come to the conclusion that experimental removal of the sympathetic trunk in cats produces no effect on normal tone which can be observed or recorded and that the maintenance of rigidity in cats whose cerebrum has been destroyed is unchanged after the removal of sympathetic innervation to an extremity. Forbes *et al*[10] after performing many animal experiments, come to the conclusion that the theory that contractile tone of muscle is due to the cerebrospinal nerves and the plastic tone to the sympathetic is without adequate experimental foundation. They conclude that any slight loss of tone after sympathectomy is due to some incidental feature of treatment. Their conclusions remove the alleged physiological basis for ramisection as a cure for spasticity. Therefore, the failure of Royle's operation would appear to be due to its being based on unproved and erroneous physiological theories. Royle[11] himself, for Hunter died a most untimely death a year ago, by no means bows the head to the storm of adverse criticism, but stoutly maintains the truth of his contentions.

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Dr. H. Eltringham used the eye of a glow-worm as a photographic lens and projected a photograph eight inches in diameter, while the eye-lens that took it had an area of only one fifty thousandth of a square millimeter. Glow-worms have perfect sight, Dr. Eltringham said; and butterfles recognize each other at three feet. The favourite colour of butterfles is purple, because that is most conspicuous against a green background. Insects see by ultra-violet light rays invisible to human eyes. Such sight is possible because the butterfly's eye, though only the size of a small pinhead, contains five thousand lenses acting upon fifty thousand nerves.—*Science Supplement*, Aug. 27, 1926.

Editorial

THE CARE OF THE SICK AND THE PREVENTION OF DISEASE*

THE hospital in the beginning was the Hotel Dieu, God's guest house. The hospes, or guests, or patients, were the homeless, the hungry, the ragged, the miserable, and often, but not always, the wounded and ill. To refuse help to such was to be ashamed before men and angels; to care for them was to grow in the great all-inclusive Christian grace of charity. The men who received these human derelicts tried to heal both body and soul, and perhaps there was something worth while in this "combined method." In such a guest house, in southern Italy, about the year 500, lived and worked Saint Benedict. One of the precepts of that saintly superintendent, one of his hospital rules that has come down to us, one bit of the medical ethics that made the spirit of the place was: "The care of the sick is to be placed above and before every other duty, as if, indeed, Christ were being directly served in waiting on them."

It is a far cry from Saint Benedict finding Lazarus fallen upon his doorstep to a practitioner of to-day applying what science he can command for the relief of over-fed, over-pampered people, or of hard-driven, worn-out people; alike the products of a more complex age. Yet it may be worth our while to consider some phases of the care of the sick in the twentieth century in the light of this fine precept of the early years of the sixth. "The care of the sick is to be placed above and before every other duty." Such a sentiment any assembly of ordinary people would applaud to the very echo. It is a very human trait to approve sentiments, but miss their implications, and fall short in their applications. But translate such a sentiment into practical counsel for the prevention of disease, which is better than its cure, or into measures for the betterment of public health, or into any expenditure of money to carry on research which may result in the saving of life, and it is remarkable how the fervour of the echoing applause will evaporate.

Sickness, as people in general think of it, is sporadic, an emergency like a fire or a shipwreck, a time for flurry and excitement in which a cool head is considered a sign of a hard heart. But sickness is something to be expected, prevented if possible, but still anticipated and provided for, and as such is deserving well-thought-out community arrangements, but such common sense considerations arouse no great measure of enthusiasm.

A good citizen should give thought and interest to the community care of the sick as he does, or should do, to sanitation, education, to public safety and to public morals. Parliaments and councils owe a fair share of their time to the care of the sick, and much more of their interest and sympathy than is usually shown, though it could scarcely be considered for them as above and before every other duty.

But to the medical man the care of the sick *is* above and before every other duty. In his own practice it is mere common honesty to his patients that it should be so. "The greatest trust between man and man is the trust of giving ing counsel" (Bacon). And far beyond the circle of his own work, it is his special share of good citizenship to bring to the counsels of the community regarding the care of the sick, the help of his training and experience. A filthy city in a way condemns all sanitarians; an unsafe bridge is a reproach to all engineers; inadequate care of any sick

* Abstract from presidential address before Manitoba Medical Association, September, 1926.

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anywhere should be upon the consciences of all physicians everywhere.

What, then, of our arrangements for the care of the sick at the end of the first quarter of the twentieth century? It is hard for us to see them straight because we are part of them; but from the safe point of view of, say, five centuries hence, what might be said? It is easy to speak of the tremendous triumphs, especially of the past half-century, the germ causes of disease discovered, not a few age-old diseases annihilated, or conquered by medical science, and just waiting for administrative science to banish them. There is little doubt that the finest modern achievement is a ten years addition to the average length of life gained in one short quarter century. But with all this great advance, the emergency of war would still find us hunting for A1 men in a C3 population. We would still have to consider one-third of our young manhood unfit for even the rough uses of war, and therefore, less than fully fit for the finer duties of peace. Any survey of any part of our people, children in schools, workers in factories, will reveal physical defects and incipient disease; the seeds of a grim harvest of disabilities to come. As Sir George Newman says: "The sickle of death comes yet too early; pandemics continue to be fateful, and influenza, rheumatism and cancer are unconquered; there is an alpine mass of suffering, invalidity and disablement which is preventable. The capacity and well-being of the human species falls far short of its potentiality; we walk haltingly in the dark when we ought to be marching forward in the light of new truth."

The big question is not what medical science *can* do at its utmost, under exceptional circumstances, for the few, but what medical science *is actually doing* for the average man in the average community. If that average falls far below the possible, why does it fall so low, and how can it be raised? Medical science can answer for itself, but how about medical management?

Medical discovery must get out of the laboratory to the people before it can serve the people. The advantages, such as they are, of the radio have reached more people in five years than those of x-ray in thirty. It is fair to say that if medical science is applied to the needs of average people slowly the fault does not lie altogether, perhaps not even chiefly, with the much-abused practitioners.

The basis of the care of the sick is diagnosis, and to say the least, our system does not allow of the maximum uses of the means of diagnosis. The commonest tragedy of practice—and it is very common—is the tragedy of late diagnosis—the man who worked until yesterday is found to have advanced or hopeless disease to-day. Late diagnosis in pulmonary tuberculosis is the almost invariable rule, the reason being that nothing less than advanced tuberculosis makes a man feel sick enough to call a doctor. The tragedies of late diagnosis need not surprise us when it is considered that the first diagnostician under our system is the patient himself, and symptoms must often be marked, and disease must actually interfere with work before he will cross what for him is a difficult Rubicon, and decide that he is a sick man, and see the doctor. A fireman who sees smoke, yet waits, hands in pockets, for a formal fire alarm, is an idiot; but a doctor who sees signs of illness and discreetly shuts his eyes until the sufferer at a late stage mentions the matter, is an ethical professional gentleman. Such is the topsy-turvy of our system.

This condition of affairs will not be broken by a few new methods, but only by a new fundamental idea, the idea that disease should be dealt with by prevention when possible rather than by cure; that health is easier to maintain than to restore; and that medical science can help even more in keeping well than in getting well.

The prevention of disease is the ideal of medicine (Sir Humphry Rolleston). People in general are beginning to grasp this very sensible idea, and have already begun to ask for periodic routine examinations while yet apparently well. So we medical men will have to prepare to make them. We have not covered our-

selves with glory in such examinations made for insurance companies, or for our country in time of war. Our teaching and experience have fitted us for what we have called the art of healing. The new art of preventing disease will need some new learning, a new experience, and a new and different point of view. We will have to quit laughing out of our offices people who don't look sick, yet want some scientific basis of assurance that they are well. It is not too much to say that the health of the people in the next few decades, the advancement of medical science, and the status of the medical profession, will depend a good deal upon how honestly and thoroughly we put the best of medical science into the finding of disease early by routine examinations. And I think we must say that we of the medical profession are less ready to make these examinations thoroughly and well than the people are to have them made. A very important question, therefore, is, who is to do this work. There is some danger of developing another specialty and, even worse, such an atrocity as examinations by mail. Preeminently the man who should prepare for this work, and do it, is the general practitioner. The daily drill of careful routine examinations would double his proficiency in diagnosis in the whole top-to-toe area he has to cover. And it would do much to restore also an old and excellent relation that is in danger of being lost, that of the family doctor who has functions to perform, and is privileged to offer advice even between the emergencies of definite illness. To-morrow is not yesterday; it is not even to-day; but it is a new day, with new vistas, new demands, new needs, new duties. If we are of to-morrow and not of yesterday we must press forward.

D. A. Stewart

INHERITED BLINDNESS

TO those individuals who are desirous of maintaining within Canadian borders a citizenry of high physical as well as mental endowments, the problem of inheritable blindness will prove to be one worthy of consideration. It is of interest from a great many angles. Two of the most obvious of these are our immigration policies and the public treasury. Because we are losing such a large part of our population through emigration to the United States, and because their immigration policy permits the entry into their country of no mental or physical defectives who might become a public charge, it follows inevitably that the proportion of defectives to normal people remaining in Canada will steadily increase, unless we make certain that those immigrants with whom we replenish our lost numbers are free from all physical and mental defects, and that the increase by propagation of defectives already within our borders is curtailed. We cannot prevent the emigration of our good stock, but the necessity of applying eugenic measures to those who remain here becomes more imperative than ever.

Much has been done in recent years to lessen the number of individuals with defective vision, but much remains to be accomplished. By education of physicians and midwives in the proper care of the infant's eyes at birth, we have materially decreased the ranks of those who have lost their sight owing to ophthalmia neonatorum. There is still room for improvement here, however, inasmuch as 14½ per cent of the pupils who entered one of the largest schools for the blind in Canada during the last five years, were admitted as a result of an infection with the gonococcus. Safeguards against industrial accidents responsible for loss of vision are increasing to hold in check this formidable enemy. It is now time that we turn our attention to the hitherto neglected class who are blind because of their inheritance.

The rôle that heredity plays in the production of eye defects is one not to be underestimated. There are over

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thirty inheritable defects, and approximately a third of these cause blindness. The figures for Canada during 1921 (the latest available) show that there are about 4,400 blind in this country. Of these, 1,635 are pupils in the blind schools of our various provinces. The cost per pupil per year (computing it from the records of two of these schools) is estimated at about $550.00. This means that education of the blind costs the entire Dominion about $900,000.00 a year. Since it is stated that only about 15 per cent of those educated in the institutions for the blind are able to support themselves completely, while 50 per cent remain economically unemployable, it is altogether probable that some of those not enrolled in the schools are dependent in some degree upon provincial funds.

What proportion of our blind have lost their sight due to hereditary defects or diseases? Let us again examine the records of our schools. Of the pupils enrolled in one of the largest of these within the last five years, half of them were listed as suffering from diseases recognized as hereditary. Applying these figures to the blind population at large, we estimate that approximately 2,200 in Canada have lost their sight as a result of inherited defects. The cost of the education of pupils of this class would be $450,000.00 a year. Such figures must be regarded, of course, as only a tentative estimate, until more accurate statistics are available. They are probably a little too high, but they indicate that there is an important problem to be met.

Other States are awakening to the need for restricting the evergrowing cost to the public of the education and maintenance of the mentally and physically handicapped. This they are endeavouring to accomplish, not by lessened care of the indigent, but by introducing measures directed against the continued propagation of the defective population. (See the report of the Commission on Hereditary Blindness in the United States. *Journal of the American Medical Association*, lxxxv, pp. 192-193).

The first step, of course, must be a realization of the problem by the medical profession. Popular education will follow in time. When the public are thoroughly cognizant of the expense to themselves, and of the suffering of the individuals involved, they will initiate measures to eradicate inheritable diseases of the eye which cause blindness. In a series of articles to appear in this *Journal*, those eye defects which give evidence of being inherited will be discussed, and the manner of their transmission from parent to child will be shown, so far as known. Some defects will be included which time will possibly prove not to be inherited; many will probably be omitted which further knowledge will reveal as belonging to this class.

It is hoped that physicians will educate their patients, suffering from such inherited defects, as to the inadvisability of reproduction, and through their medical societies initiate such popular education as will enable us ultimately to hope for wise eugenic legislation. It may be that some day we shall be free, not only from eye defects, but from all other diseases that are inherited.

MADGE THURLOW MACKLIN

PROFESSOR FINSTERER AND ANÆSTHESIA IN ABDOMINAL SURGERY

HOW wide are the differences of opinion which still exist among surgeons about the best anæsthetic, or mixture of anæsthetics for abdominal operations was shown by Professor Finsterer of Vienna, at the recent meeting of the British Medical Association at Nottingham. In the paper which he read at the joint session of the sections of anæsthesia and surgery he advocated the use of regional anæsthesia, by mesenteric, para-vertebral, splanchnic and para-sacral injec-

tion, combined, when unavoidable, with light general anæsthesia. The general anæsthetics which he recommends are nitrous oxide and narcylene (acetylene); that which he uses is ether. The discrepancy is due to the high cost of the gas anæsthetics and the financial straits of the Austrian hospitals.

It may be stated without fear of contradiction that the best anæsthetic in abdominal surgery is that which affords the maximum of safety with proper relaxation, and, though this may seem superflous to mention, freedom from pain. So far as safety is concerned the problem has been solved by Jonnesco of Bucharest*, who during the last twenty years has used nothing but spinal anæsthesia for every kind of operation in general surgery—*sans accident, sans mortalité;* by Crile (quoted by Professor Finsterer) who has had no fatalities in over fifty thousand operations done under gas anæsthesia; and by a number of others. As regards freedom from pain the suspicion is forced upon us that some surgeons, especially continental ones, continue to be satisfied with their favourite local anæsthetic in spite of their patient's groans.

Professor Finsterer has used splanchnic anæsthesia in eight hundred and seventy-nine abdominal operations, one hundred and twelve of which were resections of the stomach for cancer, and four hundred and sixty-eight resections for ulcer. The remainder included gastroenterostomies, exploratory laparotomies, cholecystectomies, etc. About 11 per cent of these cases required a small amount of general anæsthesia. He considers this method "almost without danger." For the removal of the rectum he uses para-sacral anæsthesia combined with the injection of novocaine at the base of the mesosigmoid from behind, and with injection into the tissues on the anterior surface of the fifth lumbar vertebra. In twenty-seven out of thirty-eight of these cases general narcosis became necessary. He recommends para-sacral anæsthesia combined with the injection of novocaine in front of the fifth lumbar vertebra, or into the ligamentum suspensorium ovarii for hysterectomy and other gynæcological operations, though he admits that gynæcology is not within his field of work.

In estimating the value to us of Professor Finsterer's experience we must remember that if nitrous oxide and ethylene had been available he would probably have used general anæsthesia far more than he did. Patients vary in different countries. In Canada the number of those willing to submit to severe abdominal operations done while they are conscious must be far smaller than in Austria. Our patients prefer to be absent when operations on them are going on.

Professor Finsterer made the statement that in the hands of the trained anæsthetist, death during ether narcosis is no longer to be feared. This, of course, is quite true when the organs are sound. There are, however, few experienced anæsthetists who have not seen an unexpected death under ether anæsthesia and a post-mortem examination afterwards which revealed unsuspected disease of the myocardium or status lymphaticus. In former years one not infrequently saw in the medical journals reports of deaths due to anæsthetics. The commendable practice of publishing these disasters has fallen into abeyance, and deaths on the operating table, more numerous than is commonly supposed, go unrecorded, so that the risks of ether anæsthesia are very generally underestimated.

Professor Finsterer's work is most valuable in showing what can be done with light general anæsthesia. It may be looked upon as a protest against the profound saturation of the body with ether, carried sometimes to the point of almost stopping respiration, which many surgeons still require in order to obtain complete muscular relaxation.

W. B. Howell

* *La Presse Medicale*, February 3, 1926, 145.

THE WAR ON DISEASE

Sir George Newman's Report for 1925

IN his annual report for 1925 which has recently been issued, Sir George Newman deals with the state of the public health in England and Wales during 1925. The birth rate during that year was lower by 0.5 per thousand than that of the previous year, and by 7.2 when compared with that of 1920. The death rate was just under 12.2 per thousand, approximately the same as in the year previous. Comparing the mortality rates of the special diseases with those of the previous year, we note that whereas in 1924 the principal cause of death was respiratory disease (174 per thousand deaths) the highest place in 1925 was taken by diseases of the heart and circulation, which increased from 168 in 1924 to 177 in 1925. A slight increase is shown in the figures for malignant disease which for 1925 were 110, and for 1924 only 106 per thousand. For tuberculosis the rate stands in 1925 at 85, while in 1924 it was 87. Some reduction in infant mortality was noted, affecting mainly the age period between three and twelve months. The low level of infant mortality, 75 per thousand births as compared with previous years, indicates that there was in 1925 a saving of some 37,000 infant lives. It also implies a healthier physical condition in children from one to five years of age. Sir George considers, however, that there is still room for further reduction, particularly as regards the exceptionally high mortality in the first four weeks of life and the mortality among the illegitimately born for whom the death rate was 136 per thousand born.

The report as a whole, however, is characterized by a quiet optimism as regards the progressive triumph over preventable disease. In his general retrospect he appears not to be concerned with the rival claims of those who believe in a state medical service, and of those who oppose this service, because he hopefully foresees a truly national effort against disease in which health officers, doctors and citizens will all take part. This appears to him the inevitable solution of present difficulties; made plain when the practical circumstances of the war against disease are considered. Sickness is never a single event. Even a cold in the head is a problem of preventive medicine, a research problem, a problem in epidemiology and therapy, and a problem of domestic and personal hygiene. What is true of a cold in the head is true also of every industrial accident, of every ailment which threatens child life, of cancer, tuberculosis and heart disease. The new regulations for the insurance medical service, the rules governing the use of preservatives in food, and the plans to control atmospheric pollution, do not give results immediately apparent, but their importance is real and vital. Last year, for example, there was lost to the nation among the insured population, only excluding the loss due to sickness for which benefit is not payable, a total of twenty-five million weeks' work, or the equivalent of twelve months' work of nearly half a million persons. A great part of this loss must be attributed to causes lying beyond the scope of the profession, and over which the citizen himself has the most control. This is obvious when the nature of the ailments responsible for the loss is considered. Common colds, represented chiefly by bronchial and nasal catarrh were the most frequent causes of this temporary disablement among the working population. Sir George does not consider changes in the weather as the sole or even the chief cause of these affections, but places the chief blame on the impurities in the atmosphere. In other words, smoke abatement is a part of preventive medicine in which every doctor and every citizen, to say nothing of every employer of labour, has a vital interest. His opinion on pollution of the atmosphere is summed up in his report as follows: "Every form of industrial or mechanical contrivance which either

prevents or reduces pollution of the atmosphere is a contribution to the public health, and this aspect of the problem calls for the continued and vigilant attention both of authorities and those responsible for commercial concerns. But this is not all. There is needed an increase in the knowledge and practice of healthy living. Much can be done by personal prudence, by cleanliness, by exercise, by correct breathing, by domestic ventilation, and by the practice of individual hygiene." Diseases of digestion also rank high as robbers of health and of industry. Still further, the research worker can no longer be relegated to the obscurity of his laboratory but his investigations are called for in every home into which disease has penetrated. Last year, heart disease ranked first among the death dealing ailments. Its cause is still imperfectly understood. Cancer had a third place. To fight these deadly diseases the resources at the present within the grasp of the profession are unavailing; new knowledge must be obtained through research.

Sir George is unquestionably right when he demands greater co-operation between all those engaged in this war against disease, and draws attention to the necessity for a more generous financial support of research by the public who should be so deeply interested in the saving of life. In closing, he calls attention to the fact that in the near future this war on disease must to some extent change its character. Both birth rate and death rate have fallen side by side, and the average age of the population has increased. Consequently the average age of the working population goes on increasing. The effect must be to make youth more valuable in an economic sense and to make the burden of preventable disease heavier.

SOME ASPECTS OF PAIN

IN a recent address delivered before the Oxford Medical Society, Dr. J. A. Ryle of Guy's Hospital chose for his subject "Some aspects of pain," devoting attention chiefly to the clinical aspects of local and referred pain in visceral disease.

There have been two main schools of thought in regard to the mechanism of visceral pain. The first school, basing its views on the work of Lennander, and having the late Sir James Mackenzie as its most vigorous protagonist, insisted that pain was not felt in the viscera, but that it was referred to the somatic tissues supplied by the same segment of the cord which supplies the viscus in question. The second school supported by Ross and Herdt, and perhaps the majority of physicians to-day, while recognizing that visceral disease may be accompanied by referred somatic pain, contends that the viscera themselves are capable of feeling pain in the presence of stimuli. The speaker insisted on the correctness of the following statements:—True pain may be felt by a viscus, but such pain as a rule is due to an abnormal increase in the tension of the muscular tissue of the wall of the viscus; an increase which may arise either from excess of contraction, or from failure to relax adequately in the presence of increased intravisceral pressures.

Visceral pain however, when occurring alone, or dissociable from attendant somatic pains, may be accurately localized by the patient. Referred somatic pain and tenderness (the visceral sensory reflexes), and the associated visceral motor reflexes, although they may accompany a severe visceral crisis of mechanical origin, more frequently express an inflammatory lesion of the viscus. When persistent, such pains invariably express organic disease of an inflammatory character. Before illustrating his remarks by reference to painful disorders of the central abdominal viscera he drew attention to the normal sensibility of the hollow organs, and asked if visceral pain is not produced

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in the viscus where are the normal sensations peculiar to the viscera felt. Never had the speaker seen it suggested that these normal sensations were referred to the somatic tissues, nor does daily experience suggest that they are felt elsewhere. In the case of the stomach we all recognize as gastric the sensations of appetite and hunger, and the sensations of fullness or repletion. These are clearly related to the peristaltic activity of the stomach wall, and have been shown to depend on the state of tension of the gastric muscle fibre. Of the appendix and gall bladder we are quite unaware in health, but are quickly aware whenever local distension of the intestine with flatus occurs. The sensation of the desire to micturate is felt in the urethra and in the bladder. All these physiological sensations are related to increasing pressure on the walls of the viscus, and are relieved by evacuation. Lennander showed that the abdominal viscera when exposed could be pricked, pinched, cut or burned without causing pain, and we are all familiar with the insensibility to such stimuli of a colotomy loop. Waugh has recently shown a similar insensibility in the case of the heart. These and many other observations support the contention that the hollow viscera are sensitive and it is the muscular coats which appreciate the sensations. Those who contend that the viscera are insensitive seem to have paid too little regard to the fact that special organs respond only to special stimuli. There is no reason for the viscera to appreciate tactile or thermal stimuli, but it is vitally necessary for them to appreciate states of fullness and emptiness. Visceral sense is muscle sense, and the sensations of fullness or emptiness are parallel with the sensations of posture and tension in a limb. Pain results when tension is greatly exaggerated in one manner or another. One of the most recent textbooks of physiology asserts that visceral pain is vaguely and inconstantly localized. Ryle believes that clinical experience teaches otherwise, if we are careful to dissociate the primary or local from the secondary or referred phenomena. Careful observations of many pains warrant us drawing the conclusion that visceral pain expresses a perturbation of visceral function, which may or may not be due to local organic disease, while the somatic phenomena generally express a structural lesion of the wall of the viscus. Interest in the subject of visceral and referred pain was first stimulated by studying cases of gastric and duodenal ulcer. The pain of duodenal ulcer, a gnawing or aching pain, occurs when the stomach is in the posture of approaching emptiness, but through reflexly enhanced tonic action its muscle becomes and remains abnormally taut. This pain is relieved when the stomach adopts its posture to accommodate food. Somatic signs are rarely present in simple gastritis because the lesion is too superficial and does not involve the muscular layer.

After calling attention to the variety of pains in the several viscera he says: "My remarks have been chiefly concerned with an attempt to support in the case of each viscus the hypotheses set forth at the beginning of this lecture. Of all symptoms pain is the most important. In practice we find only a small proportion of our cases have physical signs, and it is, therefore, necessary for us to educate ourselves in methods of analyzing pain as accurately as possible, in collecting information about their character, their situation and attendant phenomena, and the factors by which they are intensified or relieved. Many pains and discomforts previously dimly understood may have their nature revealed by careful analysis, although occasionally we must admit defeat. The more observations we are able to make about a pain the more likely are we to arrive at a correct solution."

In conclusion, Dr. Ryle pleaded for the group study of pain, saying that there is no study more likely to furnish interest and rewards in practice than a concerted study of visceral and other pains. No apparatus is required, no laboratory experience is necessary, and yet a valuable piece of clinical research

can be pursued if four or more men in one town will set to work to keep and pool their notes of all cases of certain types of pain. You may discover nothing new in the course of years, and yet you will inevitably clear your own minds of points which formerly were obscure. "Each one of us should bear in mind the saying of Hilton which I am never tired of quoting: 'Every pain has its distinct and significant predication if we will but carefully search for it'."

THE MENACE OF OBESITY

IN a recent number of the *Lancet* (September 4, 1926, p. 508) in an article on the elements of longevity, attention is called to the unfavourable experience of thirty-four American life insurance companies in regard to the lives of those in whom the circumference of the abdomen exceeds that of the chest, but adds that even here an hereditary tendency to longevity is the ruling factor, for corpulent descendants of long-lived parents have, as a rule, a normal expectancy of life. In a later issue (September 11, 1926) it refers to investigations carried out on an extensive scale in America, which show that the optimum weight for men of forty-five years is about twenty pounds less than the accepted average weight for that age; and says that the steady decline in physical efficiency, which the carrying of twenty pounds of superfluous matter entails, should in itself be a sufficient check on the dangerous self-complacence with which the middle aged man views an increase in his girth. In an editorial on the subject of obesity it calls attention to Dr. Leonard Williams' recent book on "Obesity." This writer states that the infiltration of fat into the subcutaneous tissues frequently results in a raised blood pressure from increased peripheral resistance, and against this high blood pressure a heart embarrassed both on its surface and throughout its musculature has to work with diminished efficiency. Renal disease, it is stated, frequently follows such a condition of affairs, and it is not surprising to learn that the mortality from cardiac and renal diseases among the obese is twice as high as in persons of normal weight. As an additional warning to the obese it is stated that such a diseased heart may give rise to very little in the way of symptoms, and nothing in the way of local physical signs; yet, as Dr. Williams emphasizes, the fat man dies the next time he hurries to catch a train. Obesity does not stop at producing disturbances of the circulatory system; the respiratory system may also suffer, and not a few asthmatics may be greatly relieved by cutting down their weight. Among other disadvantages, troublesome forms of dyspepsia may result from overweight and an invasion of the liver by fat elements increases such troubles leading probably to the form of diabetes associated with obesity. The cure of obesity is largely bound up with the cure of its causation. Perhaps the most striking advance on the subject within recent times has been the proven complicity in some cases of endocrine insufficiency leading to the broad classification of obesity into that caused by alimentary surfeit, and that caused by deficient activity of one or more of the endocrine glands. Nevertheless, it would appear that most of the obesity commonly seen is due to overfeeding. "To the scientist," wrote Vance Thompson, "there is nothing so tragic on earth as the sight of a fat man eating a potato." The starchy carbohydrate foods rather than the more quickly metabolized fats are responsible for much of the alimentary type of obesity. A more rational diet will go a long way in preventing this troublesome complaint. Muscular exercise, fasting, the use of thyroid extract and special diets such as that associated with the name of William Banting, the undertaker of St. James's Street, London, have all

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some value, but it would appear that often the influence of race and heredity have a still more powerful influence. Certain, however, it is that obesity is a serious menace to health, and one which requires the attention of the profession.

ON THE VALUE OF TRYPARSAMIDE, IN THE TREATMENT OF THE LATER SYMPTOMS OF SYPHILIS

ON the value of this new arsenical compound, observations have been published by workers in France, Germany and the United States. Extensive trials have been made at the Mayo Clinic, Rochester, Minn., U.S.A., and in a paper in March of the present year carefully recorded observations on 207 patients were published, of whom 113 had received at least two courses of tryparsamide each consisting of ten injections. In their fifty cases of early general paralysis treated with this new drug, with the addition of mercury or bismuth, 12 per cent showed definite remissions—not much of an improvement on ordinary statistics. Improvements in the state of the blood and cerebro-spinal fluid, as judged by specific reactions, occurred in 32 per cent, and in 20 per cent the findings in the spinal fluid became normal. These serological effects were more marked the more prolonged the treatment. In a number of cases tryparsamide appeared to produce improvement, when other preparations had failed to do so. It seemed to these observers, Drs. O'Leary and Becker, that tryparsamide acted beneficially chiefly as a "finishing-off" remedy after courses of treatment with other drugs. Of fifteen cases of general paralysis of the insane without paralytic symptoms, in only one did the cerebro-spinal fluid become negative to specific tests; in the others there was little improvement except such as resulted from the general tonic effect of the drug.

In a detailed report (*The Lancet*, October 2, 1926) to the Medical Research Council of Great Britain, Dr. J. D. Silverston relates his experiences with tryparsamide in the treatment of neuro-syphilis at the Whittingham Mental Hospital, Preston. His observations include patients to whom tryparsamide was administered as an adjunct to treatment by malaria. These patients were compared with others treated by malarial fever alone, but neither the clinical nor the serological results were considered by Dr. Silverston as any better in those that had the additional tryparsamide treatment than in those treated by malaria alone, and in the more advanced cases of the disease the use of tryparsamide was not free from the untoward effects to which several writers have called attention. In Dr. Silverston's cases four patients out of a total of twenty complained of dimness of vision and in one of these a slight defect became permanent. In the same issue, the *Lancet*, sums up a comparison of the results reported to date by stating that in the majority of cases, tryparsamide has no proven advantage over the more tried arsenical compounds. Injections of it may be employed with caution in those not suited to the risks of malarial treatment, but the visual complications offer a hazard which it is not possible to obviate.

THE TREATMENT OF PSORIASIS

ALTHOUGH psoriasis is one of the oldest and commonest diseases of the skin we do not yet know how to eradicate it. We may temporarily make it disappear but we cannot promise a patient that his first attack will be his last. Our difficulties are associated with the fact that we are still in ignorance of

the cause of the disease and British dermatologists still regard constitutional treatment by injections as ineffective unless supplemented by vigorous local measures. Of local measures by far the most effective was chrysarobin; while equal parts of tar, glycerole of lead, salicylic ointment and mercurial ointment were often very effective. The strength in which the various applications should be employed depended upon the stage of the eruption (*Lancet*, September 11, 1926, p. 550). An editorial in the same number, however, discusses the remarks made on this disease at the recent meeting of the British Medical Association, and refers to an article by Dr. Versari of Naples,* who claims to have used internally with much success tartro-bismuthic salts. It has long been believed that psoriasis is sometimes favourably influenced by injections of grey oil and arseno-benzol even in the absence of signs of syphilis, and that salts of bismuth have a definite spirochæticide action. These researches according to the *Lancet* influenced Dr. Versari in experimenting with an organic preparation commercially known as *trepol*, which is an oily suspension of tartro-bismuthate of soda and potash containing 60 per cent of bismuth. Intramuscular injections every five to six days in doses of from 2 to 3 c.cm. were given in twenty-one cases. They were well tolerated, no stomatitis or renal trouble occurred, and out of the twenty-one cases under observation a complete retrogression of the lesions took place in twelve. In the other nine there was partial regression, desquamation, and diminution of the hyperæmia. All the patients had relapses, but all in a much slighter degree. In three patients a psoriasic leucoderma appeared after the cessation of the lesions. Researches made on smears from the lesions failed to discover the spirochæta psoriasis, but linear or spirilliform bodies were seen coloured violet red by Giemsa. In the absence of any positive evidence of the presence of an organism, the action of the bismuth injections cannot be explained. Dr. Versari is inclined to agree with Sabouraud's opinion that the various injections which have been used with success may be considered as working by shock production. Most of his colleagues in this country will agree with this view, but it does not follow that certain successful preparations are not more effective than others, in producing shock of the right kind.

* *La Riforma Medica*, May 3, 1926.

THE PRESENT POSITION OF SANOCRYSIN

WE have endeavoured to keep our readers in touch with the subject of the sanocrysin treatment of tuberculosis *C. M. A. J.*, April 1925, xv, 409, and July 1925, xv, 741. As will be recalled from these, the treatment was described as one requiring careful trial, since it involved the use of a salt of gold possessing highly poisonous properties. Its use in Great Britain was taken up by the Medical Research Council. Their preliminary report was cautious, but concluded that further trial of the drug was justified. This was a year and a half ago, a period long enough to allow of extensive observations and the second report now published is, therefore, one on which fairly definite conclusions may be based.

This second report deals almost entirely with the clinical aspect of the treatment. It does not go into the question of the effect of sanocrysin on tuberculosis experimentally produced in animals, although this point is one over which there is disagreement, and one, moreover, which is at the root of the whole inquiry into the value of sanocrysin.

From the clinical aspect, however, the report is interesting and informative. A fairly large number of cases (about 140 altogether) have been under treatment, and the observations have been carried

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out at a number of hospitals in Great Britain and Ireland. It is quite evident that serious risks attend the use of sanocrysin. It is true that only one fatality is reported in this series, compared with two out of thirty in the first series, but the risk remains. Even if not fatal, however, there may result from its use sudden or progressive exaggeration of symptoms, with poisonous effects on the kidneys, the liver and the skin. It is much more likely to cause these undesirable effects than is, for example, salvarsan in the treatment of syphilis. This makes it imperative that patients being treated with sanocrysin should be in bed and under close medical observation, thus definitely removing this method of treatment from those that may be employed for dispensary patients.

There is still a considerable divergence of opinion as to the value of this treatment. Some have found that it has given no better results than might have been expected from prolonged rest under ordinary sanatorium care. Others, however, insist that they have found the drug to cause unusually rapid amelioration of all the features of a tuberculous infection, especially in the lessening of the sputum and the disappearance of tubercle baccilli. There is genera lagreement that whatever the value of the drug may be, it should only be used in carefully selected cases.

The results so far may be summarized as follows:—In carefully selected cases, and with moderate doses sanocrysin may sometimes be expected to produce improvement in the symptoms, but the drug possesses dangerous properties and requires not only careful administration, but also a very judicious selection of the cases to be treated with it. It has, however, encouraged the hope that along the line of some such substance a new drug may yet be developed which will check the tuberculous process. We are informed that Professor Lyle Cummins is coming to be the guest of the Canadian Tuberculosis Association, and will speak in several Canadian cities on the treatment of tuberculosis, including its treatment by sanocrysin. H. E. MacDermot

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THE SEYMOUR PLAN FOR ELIMINATION OF DIPHTHERIA, SMALLPOX AND TYPHOID

DR. M. M. SEYMOUR, Deputy Minister of Public Health for Saskatchewan, in his presidential address at the annual conference of state and provincial health authorities of North America last May called attention to the large amount of sickness and death, which occurred yearly owing to the continued presence in our midst of the three diseases, diphtheria, smallpox and typhoid; diseases for which science had placed effectual preventive agents in our hands; all that was necessary was to educate the public to make a sufficiently early use of them. It was now possible by a united effort to wipe these diseases entirely off our list. To effect their definite elimination he proposed a continent-wide attack upon them by means of our toxoids, and immunizing vaccines carried out as far as practicable systematically and simultaneously.

It was with pleasure we noted the enthusiastic response with which his suggestion was greeted and the start that has already been made in some districts. The health authorities in the various states and provinces have been appointed a committee of which each member is to take the lead in his own district, with the assurance that he can rely on the assistance and endorsation of all the rest of the committee, and of the medical profession in his neighbourhood. To accomplish the Herculean task of arousing and educating the public the assistance of the press, of the clergy of all denominations, and of teachers generally, is to be obtained.

It is hoped that with the united efforts

of all a sufficient amount of influence can be brought to bear upon the public to ensure success. Dr. Seymour's name has been attached to the plan. In the United States it has been enthusiastically endorsed by the American Health Association and the American Medical Association, and in Canada the editor of the *Public Health Journal* writes as follows:—"It is to be hoped that a special endeavour will be made to make this plan effective in Canada and that the organization behind it will be along the broadest lines. In such a scheme affecting the whole country undoubtedly the Dominion Department of Health should take the lead. The Canadian Medical Association has endorsed it and all voluntary health agencies should co-operate; a strenuous effort should also be made to get the fullest co-operation from the press. Dr. Seymour, whose ability and power of initiative in the health field have been internationally known for years, is to be congratulated on striking on this unique form of health organization. It is to be hoped that the Seymour plan will receive the support which its importance deserves." It is Dr. Seymour's hope that in the course of a year or two the public can be sufficiently aroused to the advantages that will accrue from the stamping out of these diseases and the great saving of health and of life, not to speak of much suffering and of much financial loss that will result.

Editorial Comments

PUBLICITY IN MEDICINE

The desirability of educating the general public regarding all important facts in connection with both personal and public hygiene is unquestionable. The publication of books and the delivery of lectures on medical topics of general public interest has been gaining favour in this country for some time, and so long as this can be done without personal advertisement the result will be beneficial. Practitioners, however, who undertake this work ought to make it a condition that there shall be no unnecessary display of the writer's own medical qualifications and experiences, but should endeavour, as far as possible, to do it in an impersonal way. There are special reasons, moreover, why practitioners of established position and authority—leaders in the profession—should not publish in the local press articles that could in any way appear as advertising their own professional status and experience. Certain it is, that discussions in the lay press on disputed points of treatment or pathology should be avoided by all those who desire to maintain a high ethical standard in the profession. We regard it therefore as extremely unfortunate that the name and portrait of an eminent surgeon in London should have been permitted to appear on the menu cards of a restaurant, even in connection with such a simple piece of information as a dietary for athletes. The ethics of our profession wisely insist on the impropriety of attracting attention either to oneself or to one's personal opinions on medical problems by indirect advertisement or by furnishing letters and comments to newspapers or magazines. Self-assertion and self-laudation defy the traditions of a profession, and lower the tone of any member employing such methods. The action above referred to, however, has been publicly defended by its author in the following statement which appears in a letter to the press. "In America you can write freely in the newspapers and educate the public. I think it is up to the general public here to insist that it should have knowledge just as it has in America." In an editorial the editor of the *Journal of the American Medical Association** states that the writer has been misinformed, and calls attention to the ethics to which we are also referring. Newspapers unfortunately have hastened to comment on the incident, and have reiterated charges that physicians hesitate to co-operate with the public, because they fear health education will be to their personal financial detriment. The British Medical Association has caused one paper, the *Daily Mirror* to publish a detraction of this charge, and is suing another paper for libel. At the same time its secretary calls at-

* *Journal American Medical Association*, Oct. 9, 1926.

tention to the principles adopted by the British Medical Association at its annual meeting in 1925. In these principles the fact is emphasized that all medical practitioners should be citizens taking their due share in public life, but that this need not involve any advertisement of themselves as practising physicians. Active publicity is only permitted to men not in practice, when the question of personal advantage cannot arise, and to officials in departments of health, where publicity is not only desirable but necessary for the fulfilment of their official duties.

ON RHEUMATIC DISEASE IN CHILDREN

During the past few years much attention, both in England and America, has been directed to an investigation of the conditions which favour the development of rheumatic disease in childhood. In our last issue we directed attention to the report of a committee of the British Medical Association on this subject. Since the publication of this report, however, other papers of importance have appeared. Dr. J. Morrison of Bristol in a recent paper (*Lancet*, Sept. 25, 1926) states that he considers rheumatic heart disease essentially a disease of elementary school life, and although he finds no absolute connection between rheumatic disease and poverty, as the poorest of the poor are not the class most affected, nevertheless the disease appears to thrive chiefly where proper social and environmental conditions are lacking. Family predisposition in his opinion plays an important part in its etiology, and a condition of chronic dampness in the house greatly favours its development. When the location of all known cases of heart disease were plotted out on a map of Bristol it was seen that they clustered chiefly around the site of the many streams with which the centre of the city is interpenetrated. In London too, children suffering from rheumatic heart disease are found not to be distributed uniformly over the county area, but in the majority of the cases they are met with along the lines of the alluvial valleys marking the ancient courses of streams flowing into the Thames. An enquiry carried out during the past year would appear to confirm the findings of Dr. Jean Shrubsall some years ago that the majority of rheumatic cases are found in the lower lying districts near the Thames, particularly in the neighbourhood of the Neckinger in Bermondsey and Rotherhithe. In a communication which appears in the *Lancet*, Sept. 25, 1926, Dr. Vercoe states that he regards heredity as one of the most important factors in the development of an attack, and a condition of dampness in the surroundings as following closely upon it in importance. Septic teeth and enlarged tonsils while often associated with dampness in the surroundings have in his opinion no definite relation otherwise to the development of rheumatism. Dr. Thompson of Birmingham also considers that rheumatism is not closely related to slum conditions. He is an advocate of tonsillectomy, believing that this operation reduces the severity of rheumatism and limits the heart involvement. It is also abundantly clear that rheumatic children with any involvement of the heart demand prolonged care to prevent undue strain on the heart and a recurrence of the attacks. All the writers admit that rheumatism in children, with its trail of death, maimed lives and economic loss, is an insidious scourge which demands the careful investigation of the profession.

THE GYE-BARNARD ORGANISM OF CANCER

The report made at the annual meeting of the British Association last year by Drs. Gye and Barnard, of England, aroused the greatest interest in both lay and medical circles. It is therefore with much regret we notice that since they reported at that time, no confirmation of their experimental work has been obtained. Very elaborate investigations conducted in the Research Institute of Cutaneous Medicine in Philadelphia by Drs. Harkins, Schamberg, Kolmer and Kast[1] have ended in the same result. These later investigators state that they cannot confirm the evidence of a growth of the virus of the Rous chicken sarcoma in sub-cultures, nor can they corroborate the statement that the so-called specific factor acts by reason of the presence of a chemical substance. Their results would suggest that the specific factor is in reality nothing more than a suspension of attenuated living virus which may or may not produce a tumour depending on the fowl's susceptibility or resistance.

In the recent Congress on Cancer held by the

American Society for the Control of Cancer the opinion was expressed as the general belief of scientists throughout the world that none of the organisms thus far proposed as the cause of cancer have been shown to bear a primary relationship to the production of that disease. Indeed, the preponderance of evidence indicates that cancer is not a communicable disease, but a disease of the cells themselves, resulting perhaps from some intrinsic, physical or chemical disturbance.

REFERENCE

(1) HARKINS, M. J.; SCHAMBERG, J. F.; KOLMER, J. A., and KAST, C. M.: Concerning Gye's hypothesis of the etiology of malignant tumours, with special reference to the "specific factor," *Jour. Cancer Research*, April, 1926, x, 65.

THE INFLUENCE OF CLIMATE IN THE PRODUCTION OF CATARRHAL COLDS

There is still a widespread belief that climate plays a significant part in the development of catarrhal colds. In a recent editorial in the *Journal of the American Medical Association*, Oct. 9, 1926, reference is made in contradiction of this belief to the statistical comparison recently reported by Barrow which would indicate that the incidence of colds at Stanford University in California, a notably agreeable climate, is about the same as among comparable groups of students at Cornell University at Ithaca and Harvard University in Boston. In other words the extremes of climatic conditions experienced in Massachusetts and New York State when compared with the more temperate conditions in California do not prove to be all important factors in the production of upper respiratory tract infections. It adds also that it may be a disappointment to those given to offhand pronouncements to hear that the fact as to whether the students use sleeping porches, well ventilated bedrooms, or poorly ventilated bedrooms, does not appear to materially affect their susceptibility to taking these catarrrhal colds. Although the morbidity is slightly higher among those using poorly ventilated rooms the difference is not great enough to warrant any definite conclusion.

Correspondence

Our Edinburgh Letter

(From our own correspondent)

The American Gynæcological Club visited Edinburgh in the beginning of August. Among other prominent visitors were the President, Dr. Grey Ward of New York, Drs. Little of Montreal, Peterson of Ann Arbor, Dickinson of New York, Polak of Brooklyn and Hirst of Philadelphia. Though their stay in the capital of Scotland was short their programme was both comprehensive and intensive. In the morning the visitors attended operations in the Infirmary performed by Drs. Haig Ferguson, Fordyce, B. P. Watson, Johnstone and Davidson. This was followed by a luncheon at the University Union at which they were the guests of the gynæcological staff of the Infirmary. In the afternoon they were present at a series of demonstrations given in the university. In the evening Dr. Barbour entertained the members of the club and their wives to a dinner in the College of Physicians. Dr. G. M. Robertson, the President, in replying to the toast of the college, reminded his audience of the following quotation from the autobiography of Benjamin Franklin:—

"There was another bookish lad in the town, John Collins by name, with whom I was intimately acquainted. We sometimes disputed, and very fond we were of argument, and very desirous of confuting one another, which disputatious turn by the way, is apt to become a very bad habit, making people often extremely disagreeable in company by the contradiction that is necessary to bring it into practice; and thence, besides souring and spoiling the conversation, is productive of disgusts and perhaps enmities where you may have occasion for friendship. I had caught it by reading my father's books about religion. Persons of good sense seldom fall into it, except lawyers, university men, and men of all sorts that have been bred in Edinborough."

The 155th (3rd Lowland) Field Ambulance, R.A.M.C., T.A., was recently in camp at Gailes on the Ayrshire coast for its annual training. Major W. Murray, C.A.M.C., was attached for training to this Edinburgh unit. The Major proved a great acquisition to the Ambulance and it was greatly regretted that his stay was not longer.

At the medical graduation held in the McEwan Hall on July 23rd it was a pleasure to see among

other welcome visitors, Professor Jonathan C. Meakins of Montreal.

After a few years of notable achievement, Professor B. P. Watson, who was formerly in Toronto, is again proceeding across the Atlantic to the great regret of many here. Dr. R. W. Johnstone, C.B.E., has been appointed to fill the vacancy caused by Dr. Watson's retirement. Founded in 1726 the Chair of Midwifery has an interesting history. It is a continuous record of progress. The first two incumbents, Joseph Gibson and Robert Smith, seem to have confined their teaching mainly to the instruction of midwives. The former was not even a member of the Senatus. Thomas Young (1756–1780) was a pioneer in the teaching of obstetrics and was the first to give regular instruction to medical students. Succeeding him came the Hamilton dynasty. Father and son, they held the chair for sixty years. The former succeeded in founding the "lying in" hospital; the latter financed it out of his own pocket. On the death in 1839, of the younger Hamilton, the Chair of Obstetrics was the centre of a controversy between the town council and the university. The two most favoured candidates for the appointment were Dr. J. Y. Simpson of Edinburgh, and Dr. Kennedy of Dublin. A majority of the Faculty attempted to prevent Simpson's election. The town council, however, chose Simpson, thus securing for Edinburgh the most renowned professor that ever occupied an obstetric Chair. Sir Byrom Bramwell writing in 1923, says: "Simpson was, in my opinion, the greatest, by far the greatest, of my teachers. His appearance when I attended his lectures was exactly like the photograph which forms the frontispiece of his *Life* by Professor Duns—'the head of Jove and the body of Bacchus'." Simpson's absorbing interest in the subject of anæsthetics and his discovery of the sleep-producing effect of chloroform added enormously to the prestige of his *Alma Mater* and gave him for all time a centre seat in the Hall of Fame. He was succeeded by his nephew, A. R. Simpson, a brilliant operator who placed by voluntary retirement a time limit to his own appointment. The mighty genius of the one, the lofty ideals of the other, in achieving a great purpose, were followed to fulfilment by the arresting personality of Sir Halliday Croom. He, it has been said, raised obstetrics out of the position of a Cinderella, to its proper position beside the two great sisters of medicine and surgery. Succeeding years of students, charmed by the forcefulness of his teaching and his gift of clear explanation, have spread his doctrines far and wide. The greatest satisfaction is expressed in Edinburgh medical circles by the choice of the new professor. He was for thirteen years assistant to Sir Halliday Croom and was formerly Dean of the Extra-mural School of Medicine and lecturer in midwifery. He has written one of the most widely read text-books on the subject and is a popular teacher with the students. He may be safely expected to uphold the traditions of a chair, associated with so many famous names.

Dr. William Guy, the Dean of the Edinburgh Dental School, left for America on August 12th to attend the International Dental Congress. He is acting as representative of the British Dental Association. The University of Pennsylvania, has intimated its intention of conferring on Dr. Guy the honorary degree of Doctor of Laws.

A stained glass window has been erected to the memory of Major-General Sir Harry Thompson, K.C.M.G., C.B., D.S.O., A.M.S., in the chapel of the Queen Alexandra Military Hospital, Millbank. Sir Matthew Fell, the Director General of the Army Medical Service, presided at the unveiling ceremony on August 4th. Canadian medical officers who served in France with the C.A.M.C., will remember Sir Harry Thompson as the D.M.S., of the First Army when the Canadian Corps headquarters were at Camblain L'Abbé and at Hersin Coupigny. Sir Harry Thompson was taken prisoner, early in the war, and was one of the first doctors to be exchanged —early in 1915—under the provisions of the Geneva Convention. He died in 1925.

In 1773, Robert Fergusson, that ill-starred genius, was struck down by an attack of "furious insanity." This was the youth to whom the generous minded Robert Burns paid a lofty tribute, calling him his "elder brother in the Muses" and reared a monument in his memory. At that time the only available place of restraint for persons suffering from mental derangement was the city Bedlam, in the old Darien House. Thither the unfortunate poet was conveyed from his mother's house. There he was attended by Dr. Andrew Duncan (senior), at that time a young man of thirty. The sight of this talented lad lying on a straw bed, on a stone floor, in a cell lighted by an unglazed window, so impressed the young and eager physician, that he did not forget it. In 1790 Andrew Duncan was elected President of the Royal College of Physicians, and the very next day he visited the cell in which the unhappy Fergusson had died sixteen years before. Immediately he brought his plans for the better treatment of the insane before the Council of the College, lodging a requisition for an asylum at Morningside, six days before the establishment of the Retreat at York by William Tuke. The result was the erection of the old East House at Morningside, which owing to the Napoleonic Wars was not finally opened for the reception of patients until 1813. A grant of £2,000, was obtained from the Crown towards the building expenses, out of the estates which had been sequestrated after the Jacobite Rising of 1745. The most recent advance in the treatment of mental patients is the establishment by the managers of the Edinburgh Royal Mental Hospital of a new home at Vogrie. Situated ten

miles south of Edinburgh in extensive, well wooded grounds, the institution will provide accommodation for thirty to forty patients. At the inaugural meeting, Mr. T. M. Gardiner, Chairman of the Board of Managers, traced the progress that has taken place in the treatment of mental patients from the days of Fergusson until to-day. He pointed out that at Craig House, Morningside, over 60 per cent of the admissions in any given year are voluntary patients—that is, they have not been certified but are there of their own freewill, and can leave at any time on giving notice. The idea and purpose of Vogrie House is to provide a home for the early treatment of mental disorders; a residence to which patients may go without being certified as persons of unsound mind, thus obviating the necessity of entering an asylum.

The following paragraph is copied from the description of the unveiling of the Kitchener Memorial Tower on Marwick Head, Orkney, which appeared in the *Orcadian* of Thursday, July 8th:

"The King's Representative Arrives"

"Between the Marwick road and the Marwick Head there is no public highway; there are expanses of cultivated fields and rough heathery braes. So the representative of the King, in the person of Sir William Watson Cheyne, Lord Lieutenant of the county, arrived, in his uniform of scarlet and silver, and his breast ablase with decorations and orders, in no stately motor car. He came perilously perched in a farmer's gig, which swayed and rolled over the uneven ground. His departure later, was in an even more rudimentary vehicle, a farm cart."

Sir Watson Cheyne's many admirers will rejoice to see that he was present along with thousands of other islesmen to do homage to the great war chief who went down in the *Hampshire* in June, 1916.

GEORGE GIBSON.

Our London Letter

(*From our correspondent*)

Less Crowded Medical Schools.—By far the majority of medical students begin their career by entering a university or medical school in the month of October so that a pretty accurate index of the total yearly influx of students could be furnished by returns from the various London medical schools who advertise themselves so widely during the late summer months. Such advertisements are viewed with misgivings by those who are suffering from the glut of newly-qualified practitioners which appears to exist in London, for in many of the teaching hospitals resident appointments are being fought for with a competition quite unprecedented. However, a closer examination of the numbers of newly registered students during the past few years indicates that whereas the average annual entry for Great Britain and Ireland for the thirteen years before the War was about 1,400, six years ago this figure rose to the height of 3,420. The majority of this large crowd presumably will have become qualified practitioners during the past twelve months or so, but that this is a purely temporary and abnormal state of affairs is shown by the fact that the entries for 1924 and 1925 were in each case just over 1,000. The considerable strain which has been thrown both on the medical schools and the examining bodies during the past few years is already showing signs of waning and this is viewed with hearty relief by all concerned except, perhaps, by those who have to handle the obvious financial problems.

The Metropolitan Asylums Board.—The resident medical officer of any London hospital feels for the letters "M.A.B." an admiration which at times is almost reverence. He knows that within a few minutes after a case of some infectious fever has been discovered in one of the wards or in the out-patient department of the hospital, he can arrange over the telephone for its removal, and that an ambulance for this purpose will start at once. Besides dealing with infectious diseases over an area of 121 square miles with an estimated population of over four-and-a-half million, the Metropolitan Asylums Board also includes among the important departments of its work, mental diseases, tuberculosis, and sickness in children. It has fifteen hospitals for infectious diseases, six mental hospitals or colonies for the feeble-minded, ten institutions for tuberculosis and five for sick or convalescent children. Some idea of the amount of administrative work entailed in such a huge organization is indicated by the fact that during the year 1925-26 the number of patients transported by ambulance was 80,000. Besides these general activities the "M.A.B." is well-known for the wide scope and progressive nature of its medical work. A special post-encephalitis unit, for example, was opened up last year at one of the Board's fever hospitals. There are four pavilions of twenty-five beds each, and the purpose of the unit is to observe and treat the after effects, physical and mental, in children who have had an attack of lethargic or epidemic encephalitis. At one of the children's homes, just outside London, the Board has instituted departments for treating diseases of the skin and ringworm in children and during 1925 nearly 400 cases of the latter disease were admitted. At another children's home sixty beds have been set aside for rheumatic fever, acute endocarditis and chorea in order that research, especially of a bacteriological nature, into some of the vexed problems of acute rheumatism may be carried

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out. The Ministry of Health has made provisional proposals to transfer to the London County Council the oversight of all health services including those for which the "M.A.B." is responsible but this is viewed with disfavour by the Board in its latest report and further developments are being watched with interest.

Advice on Marriage.—From time to time the lay press seizes on the pronouncement of some eminent scientist or medical man on the subject of marriage, and holds it up in contrast with Mr. Punch's famous advice to those about to marry. Recently the London press has made merry over two such pronouncements. Dr. William Brown, the Oxford psychologist, has urged that marriage should be undertaken early and he even goes further and insists that married folk should spend their holidays together. His remarks have been seized on as a welcome antidote to the somewhat cynical tone which has crept into modern fiction. Professor G. M. Robertson, President of the Royal College of Physicians of Edinburgh, has dealt with a more serious aspect of the subject in his recent Maudsley Lecture on the "Prevention of insanity." He showed that among married people the incidence of insanity is decidedly low. Between the ages of twenty-five and fifty-five the prevalence of insanity among single men and women is nearly three times as great as among a similar number of married men and women of the same age. Young men between twenty-five and thirty-five years of age who continue as bachelors die on the average four years sooner than married men, and as mentioned above run three times the risk of becoming insane. Prof. Robertson concludes that the condition of marriage and of family life, in spite of its greater responsibilities, perhaps on account of them, is the most favourable mode of existence for men and women.

ALAN MONCRIEFF

London, October, 1926.

Alcoholism in Classical Antiquity.—At the first meeting of the session of the Society for the Study of Inebriety, held in the rooms of the Medical Society of London on Ooctober 12th, Dr. J. D. Rolleston delivered an address on alcoholism in ancient Greece and Rome. He remarked that as the scientific study of inebriety dated only from the middle of the nineteenth century, very little was to be gleaned from contemporary medical writers as to the prevalence and effects of alcoholism in classical antiquity. Our sources of information are the poets, the satirists, including Horace, Juvenal and Lucian; the philosophers and moralists, such as Plato, Plutarch, and Seneca; but chiefly the two encyclopædic writers, Pliny the Elder and Athenæus. Though there is some indication of the existence of chronic alcoholism, as is exemplified by passages in Pliny and Seneca and in the lives of certain individuals such as some of the Roman emperors, alcoholism in classical antiquity was mainly of a convivial character, and industrial alcoholism was unknown. Dr. Rolleston quoted several passages from the classical writers dealing with effects of drink on the community and the individual, especially the relation of inebriety to insanity, crime, and poverty, and the measures, often of a fanciful character, recommended by the ancients for the prevention and treatment of drunkenness. In conclusion, Dr. Rolleston showed that the alcoholism of classical antiquity differed from that of to-day by its predominance among the upper classes, by the absence of distilled liquors, which were not introduced until the fifteenth century, and the non-existence of syphilis, which is liable to run a severe course in alcoholic subjects.—*Brit. Med. Jour.*, Oct. 16, 1926.

Venereal Disease in the Royal Navy.—In an article contributed to the *Journal of State Medicine*, September, 1926, Surgeon-Commander Percy F. Alderson discusses the results of the efforts which have been made to control venereal disease in the Royal Navy. He concludes that these efforts have met with much success, that instruction and measures to increase comfort and prevent boredom have been especially useful, that the issue of outfits and instruction in prophylaxis have done some good and should be continued, and that if more is to be accomplished it must be by reducing the prevalence of these diseases in the civilian population. In this connection Alderson notes that infection occurs relatively much less frequently in home than in foreign service, and this he attributes to the facilities for treatment which exist in the United Kingdom.—W. H. H.

Report of Societies

THE AMERICAN SOCIETY FOR THE CONTROL OF CANCER

(International meeting held at Lake Mohonk, N.Y., September 20th to 24th)

The object of this meeting of many American and European specialists was stated to be a consideration from a practical standpoint of the recent advances made in the prevention and cure of cancer, and it was hoped that upon those points upon which agreement could be reached a concise statement might be made to the general public which would be of definite value. This statement we have pleasure in presenting to our readers.

At a dinner to the foreign guests held in New York at the end of the symposium, and attended by about 250 physicians, Sir John Bland-Sutton declared that the meeting would make medical history. He spoke in part as follows: "We have had a very strenuous week, and I will say in all my experiences in congresses and association meetings I have never been to one in which there was a more complete absence of acrimony and so much work was accomplished. The zeal which led so many investigators, surgeons and physicians to cross the Atlantic and come from all parts of the American continent is creditable, and the earnestness they displayed in the conference is beyond all praise."

Dr. Wendell Phillips, President of the American Medical Association, said: "This meeting has done much to stabilize the knowledge that we have of cancer, and it will clarify the opinions, not only of medical men, but of the public. In this respect it will accomplish what no other meeting has done before."

'The great note struck at the Mohonk symposium,' declared Dr. Welch, was the tremendous importance of the cancer question and the appalling problems which it presents. There was never a time when tuberculosis presented problems of such magnitude. The general public and the medical profession must be aroused to the vital importance of efforts to control cancer. However inadequate our knowledge is to-day, it is an obligation of the profession to the general community that every effort be made to control this scourge. The community must be taught that all types of cancer are not certainly and inevitably fatal if they are recognized and properly treated at an early stage. There is no disease to which larger additions have been made to our knowledge than cancer. The many papers and discussions will be published, and make a volume which will be an epochal contribution to our knowledge of cancer."

The statement upon which the members of the symposium were agreed is as follows:—

Although the present state of knowledge of cancer is not sufficient to permit of the formulation of such procedures for the suppression of this malady, as have been successfully employed for the control of infectious diseases, there is enough well established fact and sound workable opinion concerning the prevention, diagnosis and treatment of cancer to save many lives, if this information is carried properly into effect.

1. The causation of cancer is not completely understood, but it may be accepted that for all practical purposes cancer is not to be looked upon as contagious or infectious.

2. Cancer itself is not hereditary, although a certain predisposition or susceptibility to cancer is apparently transmissible through inheritance. This does not signify that, because one's parent or parents or other members of the family have suffered from cancer, cancer will necessarily appear in other persons of the same or succeeding generation.

3. The control of cancer, so far as this subject can be understood at the present time, depends upon the employment of measures of personal hygiene, and also on certain preventive and curative measures, the success of which depends upon the intelligent co-operation of the patient and physician.

4. Persons who have cancer must apply to competent physicians at a sufficiently early stage in the disease, in order to have a fair chance of cure. This applies to all forms of cancer. In some forms early treatment affords the only possibility of cure.

5. Cancer in some parts of the body can be discovered in a very early stage, and if these cases are treated properly the prospect for a permanent cure is good.

6. The cure of cancer depends upon discovering the growth before it has done irreparable

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injury to a vital part of the body and before it has spread to other parts. Therefore, efforts should be made to improve the methods of diagnosis in these various locations and the treatment of the cancers so discovered.

7. The public must be taught the earliest danger signals of cancer which can be recognized by persons without a special knowledge of the subject, and induced to seek competent medical attention when any of these indications are believed to be present.

8. Practitioners of medicine must keep abreast of the latest advances in the knowledge of cancer in order to diagnose as many as possible of the cases of cancer which come to them.

9. Surgeons and radiologists must make constant progress in the refined methods of technic which are necessary for the diagnosis and proper treatment not only of ordinary cases but of the more obscure and difficult ones.

10. There is much that medical men can do in the prevention of cancer, in the detection of early cases, in the referring of patients to institutions and physicians who can make the proper diagnosis and apply proper treatment, when the physicians themselves are unable to accomplish these results. The more efficient the family doctor is, the more ready he is to share responsibility with a specialist.

11. Dentists can help in the control of cancer by informing themselves about the advances in the knowledge of the causes of cancer, especially with relation to the irritations produced by imperfect teeth and improperly fitting dental plates. They can also help by referring cases of cancer which they discover to physicians skilled in the treatment of cancer in this location. It may be doubted whether all dentists fully realize the help which can be obtained from x-ray photographs in revealing not only the state of the teeth but the condition of the bone surrounding them.

12. Medical students should be instructed in cancer by the aid of actual demonstrations of cancer patients, and this to a sufficient extent to give them a good working knowledge of the subject.

13. The most reliable forms of treatment, and, in fact, the only ones thus far justified by experience and observation, depend upon surgery, radium and x-rays.

14. Emphasis should be placed upon the value of the dissemination of the definite, useful and practical knowledge about cancer, and this knowledge should not be confused nor hidden by what is merely theoretical and experimental.

15. Efforts toward the control of cancer should be made in two principal directions: (1) The promotion of research in order to increase the existing knowledge of the subject, and (2) the practical employment of the information which is at hand. Even with our present knowledge many lives could be saved which are sacrificed by unnecessary delay.

Association Notes

MEMBERSHIP

The attention of every member of the Association is particularly drawn to the following announcement.

At our last annual meeting, the Council of the Association gave considerable time and thought to the problem of increasing our membership. It was the unanimous opinion of Council that the time had arrived for us to adopt active measures calculated to bring into membership a large host of eligible practitioners who have not, as yet, joined the Canadian Medical Association.

Believing that it will be the desire of every member to support this membership drive, the following plan has been decided upon. The provincial medical registers have been secured and carefully checked as to eligibility for membership in the C.M.A. To a large number of our members, scattered from coast to coast, names will be submitted with a request that each be urged to join our ranks. We do not request that any money be collected, but rather that the candidate be asked if he will undertake to honour a membership draft if issued upon him in the month of January next. It is the belief of our Council and Executive Committee that, if each member who is asked to take part in this work will do his share, a large number of new

members will be secured for the year 1927. It is hoped that every member approached will heartily enter into the spirit of the campaign.

REPORT OF C.M.A. DELEGATES TO B.M.A., NOTTINGHAM, JULY, 1926

By Samuel Johnston, M.D.

Chairman

It was with great pleasure and deep appreciation of the honour conferred on me, that I accepted the appointment of the Canadian Medical Association contained in a night letter from the General Secretary, Dr. T. C. Routley, to act as Chairman of the Canadian delegation to the British Medical Association and to carry out the Canadian Association's instructions,—*viz.*, to extend the Canadian Association's cordial greetings and urgent invitation to the British Medical Association to meet in Winnipeg at some early future date.

Acting on further instructions from Dr. Routley, I called on Dr. Alfred Cox, Medical Secretary of the British Association, at its new home on Tavistock Square, London. In passing, I would like to mention Dr. Cox's great kindness to me, and pay tribute to the marvelous organization of his department and his complete knowledge of every detail of his work. From Dr. Cox, I received advice as to the Canadian delegation's procedure in approaching the Council of the British Medical Association. As arranged by Dr. Cox, we met the Council on July 21st, at 9.30 o'clock, a.m. We were received most kindly and introduced to the Council by the Chairman, Sir Robert Bolam. Immediately on the completion of the formality of presentation, Sir Robert Bolam asked me to deliver my message, which I did as follows:

"*Mr. Chairman and Gentlemen of the Council*:

"I have the honour and distinction of appearing before you with my colleagues representing officially the Canadian Medical Association, a loyal and enthusiastic affiliated organization of the British Medical Association. May I be permitted at this time to read the following telegram, as it not only contains my authorization of office, but more especially indicates the very important matter on which we are delegated to address you.

"Victoria, B.C., June 22, 1926.

"Dr. Samuel Johnston,

"108 Avenue Road, Toronto.

"I am instructed to inform you that the Canadian Medical Association in annual session at Victoria has appointed you Chairman of the Canadian delegates to the British Medical Association. The Association has also instructed me to forward through you and the other delegates, most cordial greetings to the British Medical Association and has directed me on behalf of the Canadian Association to urge the acceptance by the British Medical Association of our invitation to meet in Winnipeg at some early future date.

"(Signed) T. C. Routley,
"*General Secretary.*

"This invitation speaks for itself, and we can assure you that it represents the unanimous and whole-hearted voice of the Association. Needless to say, the British Medical Association will have the co-operation of the Canadian Medical Association, of the Dominion of Canada, as well as of the City of Winnipeg in making your visit and meeting, feasible, enjoyable and profitable. We know this invitation will have your earnest consideration and we sincerely hope it will also receive your ultimate acceptance."

Dr. Edward Archibald was then asked to address the Council. Dr. Archibald said that he believed the previous meetings of the Association in Canada in 1897 and 1906 were very successful and that many members of the Association recalled them with pleasure. If the invitation now given were accepted, he believed the result would be to greatly strengthen the Imperial bonds. A great deal lay behind that well-worn phrase. In Canada they were anxious to be kept closely in touch with the Mother Country, and if the Association went to Canada, these bonds would be quite definitely strengthened. There was undoubtedly a tendency towards a closer *rapprochement* between Canada and the United States in medicine, and while co-operation between the profession in Canada and the States was very desirable, he for one was anxious, in order to counteract a tendency which might easily become too great, that the Association should see its way to meet in Canada in some early year.

The delegation then left the meeting with Sir Robert Bolam's assurance that the Council would give this very cordial invitation their serious consideration, and his thanks for the

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sentiments which the Canadian delegation had conveyed.

It was with a great sense of gratification we were informed at the close of the morning sessions, by Dr. David Lawson that the invitation of the Canadian Medical Association had been accepted for Winnipeg, 1930. Immediately on receipt of this information, I cabled Dr. Routley,—"B.M.A., Winnipeg, 1930."

Speaking unofficially, I made the following suggestion to the Council, *viz*, the possibility of organizing and holding an Imperial Congress of all the affiliated organizations and branches of the British Medical Association. It should not be difficult to arrange a date that would not conflict with the attendance of those who wished to be at the meeting at home as well as the Imperial Congress abroad. I feel assured that those coming to such a congress would not neglect their meetings at home nor deprive the scientific sections of anything of value they might have to present. So far as matters of medical politics and public health are concerned, all might profit from an interchange of ideas among the delegates from the far-flung reaches of the Empire. I am convinced that even the business firms, intimately associated with the practice of medicine would welcome the opportunity of an Imperial Congress for the exhibit of their products.

The heights to which the scientific programme of such a congress would rise, I leave to your imagination, with every assurance that they would surpass your expectations. No doubt you will also concede that such a congress would attract a most unusual attendance of leading celebrities in all departments of medical progress from all parts of the Empire. In a sense, such a congress might also take on the aspect of an International Congress of the English-speaking physicians of the world. I feel quite sure that many of the profession in the United States would welcome such an opportunity to make contact with their Anglo-Saxon fellows. In suggesting this idea, I fully realize that an Imperial Congress abroad and an annual meeting at home, would involve the Executive of the British Association in a very considerable amount of extra work, but I have no doubt that this would be cheerfully undertaken by those in office, on account of their interest and enthusiasm in enhancing the influence, prestige and contacts of the parent organization.

We stand at a crossroad. Which will accomplish more,—a policy of isolation or a community of interest? We plead for a future policy that will re-weld the medical profession of the Empire into a unique whole, revitalizing its influence and broadcasting its activities on behalf of suffering humanity. How could such an aim be accomplished better than to have a congress such as outlined to meet in one of the Overseas Dominions, from time to time,—giving the dominions an opportunity to foregather with the parent and sister organizations. May I respectfully submit this plan for your future consideration, in the sincere hope that some scheme may be evolved in the not far-distant future.

Just a few words about the meetings in the special section of anæsthetics and the wonderful entertainment provided for us. In my recollection, there has never been a more successful section in anæsthetics than the one held in Nottingham, July 21-23. In presiding over this section, replete with a programme of great scientific value, I took the opportunity of expressing our thanks for the invitation we had received, and of which the present meetings were the direct outcome. I also expressed the hope that the British anæsthetists would find it possible to give us the pleasure of entertaining them in the near future.

In proposing the toast of the guests at the annual dinner of the British Medical Association, held at the beautiful Palais de Danse, Dr. H. D. Brackenbury, Chairman of the Representation Body said that one of the most enjoyable features of the meeting was the fact that the anæsthetists had taken this occasion to hold an International Congress at the invitation of the British Medical Association, and that he had been assured that this congress had proved one of the most successful advances in the specialty of anæsthesia during the last quarter century. In proposing the health of the visitors, he very kindly mentioned my name, as a member of the British Medical Association, President of the Section on Anæsthetics, and Chairman of the Canadian delegation which had been instrumental in securing the approval of the British Medical Association for the meeting of 1930 taking place in Winnipeg, at which time it was hoped the anæsthetists of Great Britain would

be able to reciprocate the present visit of their overseas guests. Dr. Brackenbury specially mentioned Dr. F. H. McMechan as being the leading spirit in the organization of the present congress and expressed to him, the appreciation, sympathy and affection of the British Medical Association for this co-operation.

Among the many and varied entertainments to which the visiting delegates were invited were the following: the general meeting was followed by the President's address; at this meeting the overseas representatives and delegates were presented to the President; this was followed by the President's reception and dance at the Castle, on Tuesday, July 20th. Numerous excursions to points of interest in the neighbourhood of Nottingham, also visits to various manufacturing concerns, a garden party and tennis tournament at Lamcote House, the Popular Lecture by Prof. Hill, and the civic reception by the Mayor at the Castle, were features of Wednesday, July 21st. Thursday's programme consisted of various excursions, a reception at the General Hospital, a garden party at the Hermitage, followed by the annual dinner at the Palais de Danse, a gala performance at the Theatre Royal, and a dance at Bestwood Lodge given by Sir Harold and Lady Bowden. On Friday there were various excursions, a star concert at Albert Hall, an informal tea at the lovely home of the Duke and Duchess of Portland, followed by a reception and dance at the Palais de Danse given by the Nottingham Division of the British Medical Association.

This is a very inadequate record of the entertainments provided for us. The height of British hospitality was extended to us, and on leaving we carried away very pleasant memories of the 1926 British Medical Association meeting in Nottingham.

Miscellaneous

WHEN NOT TO OPERATE FOR HERNIA

A discussion on this subject took place recently at the Post-Graduate Hostel in London and was opened by Mr. W. McAdam Eccles, M.S., F.R.C.S. The following is an abstract of his remarks:—

Whilst it is a fact that a very large number of cases of hernia should be treated by operation, it is also true that there are a number of conditions in connection with hernia which negative treatment by operation, or at any rate render such treatment undesirable. I propose briefly to refer to some of these. I will take them specifically under headings.

I.—The Type of Patient

Age

1. *The very young.* Because: (*a*) Nature tends to bring about a cure. (*b*) Very young children do not stand operation well, and a fatality would be a tragedy. (*c*) Asepsis is, to say the least, uncertain.

2. *The "aged"* (take a man over sixty). Because: (*a*) The tissues are not in most cases such as allow of a radical cure resulting from even a radical operation. (*b*) Persons do not like operation and then to have to wear a truss. (*c*) A properly made and properly adjusted truss will bring about such an improvement that the person may not know that he has a hernia, and simply wears the truss as part of his clothing.

Sex

Male.—(i) In large inguinal hernia it is difficult to occlude the inguinal canal and the apertures—superficial and deep inguinal—sufficiently, so long as a passage for the spermatic cord has to remain. (ii) Where there is much disturbance of micturition, the result of enlargement of the prostate.

Female.—(i) Cases in which pregnancy is present in the later months; (ii) where the abdominal wall tissues are weak, particularly as the result of stretching from repeated pregnancies.

Visceral Lesions

Heart.—Advanced cardiac disease negatives an operation for cure. Operation may have to be undertaken for strangulation as a last resort.

Lungs.—Any advanced pulmonary lesion. (i) A general anæsthetic is contraindicated, although a local one might be used. (ii) The liability to cough produces a liability for the return of the hernia.

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Kidneys.—Any advanced disease of the kidneys.

Liver.—Especially when ascites is present.

Some General Conditions

Obesity.—Unless reduction of the fat can be brought about.

Ptosis of the abdominal organs in any marked degree.

Dermatitis, until this is cured by proper treatment.

II.—The Type of Hernia

1. *Inguinal Hernia.*—A large inguinal hernia with feeble abdominal walls, and with much dilatation of inguinal apertures, is very unlikely to be "cured" by operation. It may be very definitely controlled by proper truss pressure, and this control will tend to cause the danger and discomfort of the hernia to diminish most appreciably. An operation then may place the patient in complete safety, and enable a light efficient truss to be worn with comfort so as to prevent recurrence.

An inguinal hernia which has recurred is very unlikely to be cured by operation, and a suitable truss is then advisable.

2. *Femoral Hernia.*—A femoral hernia of a large size, is still more difficult of cure than an inguinal. It is well to try to obtain control of it by truss, and subsequently to consider operation, with a view, not perhaps of cure, but of rendering the wearing of a proper truss efficient and safe.

A femoral hernia which has recurred is still more unlikely to be cured by operation, and a suitable truss is then advisable.

3. *Umbilical Hernia.*—(*a*) Infantile acquired: there is a great tendency for these small umbilical herniæ in infants to become cured by natural means. Therefore, operation is not necessary before, say, five years of age. (*b*) Adult acquired: when there is present a large umbilical hernia in an obese woman, the question of operation is a serious one. It must always be remembered that literally there may not be sufficient room within the abdominal cavity for the contents of the sac. Cure of such herniæ by operation is most doubtful, but operation may make the condition such as to allow the wearing of a proper truss with comfort and safety.

4. *An Irreducible Hernia.*—There is no doubt that operation which allows of reduction of the contents of the hernial sac is ideal, but two points must always be very carefully considered: (i) Can all the contents find room within the abdomen? (ii) Will the operation permit of a truss being discarded?

From the foregoing remarks it will be seen that there are a number of conditions in which operation, to say the least, is not desirable. It is in these cases that a knowledge of the proper type of trusses becomes so very necessary.

Hostel Recently Opened

At the close of the meeting, Dr. A. P. Bertwistle who recently opened a hostel for medical men in the neighbourhood of the new building of the Association in Tavistock Square, London, drew attention to this residence and stated that it presented all the advantages of a club with few of its disadvantages.

1. No introduction beyond the presentation of a visiting card is required. This is of importance for Dominion men and women who arrive here unacquainted.

2. There is no entrance fee. This is a consideration for anyone spending perhaps only a week or two in London every few years and to those who can "drop in" only very occasionally.

3. Women practitioners may have access to all the discussions and rooms except the smoking room.

4. A doctor may bring his wife and family, and whilst not enjoying the privileges of the rooms reserved for members they can be at least under the same roof. A ladies' subcommittee will be formed at an early date to care for the interests of the family of a medical man, as it is realized what sacrifices they make when a doctor takes a holiday.

COMMON SENSE IN MEDICINE

By L. G. J. Mackey, M.D., M.R.C.P.

Physician, Queen's Hospital
Birmingham

"Science is a first rate piece of furniture for a man's upper chamber if he has common sense on the ground floor." These words of Dr. Oliver Wendell Holmes well express what was in my mind when I chose the subject for my paper.

Common Sense in Treatment

Vis medicatrix naturæ—that wonderful natural power of recovery—is usually working on behalf of the patient, though not always fast enough to satisfy him or you. So that in most cases it is

only necessary to follow the most common-sense advice that was ever given: "*Primum non nocere*"—see that your treatment does no harm perhaps we might add the words "on balance;" for we may have to do the patient a good deal of harm—amputate a limb, for example—in order to do him good.

To my mind treatment divides itself into two main classes: (1) Removal of anything tending to tax the patient's strength and lessen his natural powers of recovery. (2) Adding something to the patient to give him more power to fight his disease.

The first class seems to me the more important; it includes all surgical operations, the removal of dirt, pain, exertion, strain, worry, sleeplessness. Our treatment of typhoid fever and pulmonary tuberculosis, for example, amounts to removing the patient from all debilitating stresses except those due to the poisonous effects of the bacillus itself, which at present we are unable to remove.

In a case of neurasthenia it may be extremely difficult to discover where the fault lies, and before we can cure the patient it may be necessary to discover and remove some hidden worry or anxiety, some obscure infection, some bad habit, or perhaps some foolish fear. It is in such cases that common sense comes to the rescue, and effects a cure that no amount of drugs alone could achieve.

Take a case of pneumonia. Can we add anything to the patient which will increase his fighting power? I think we may answer, "nothing that is certain to do so"; and although drugs, vaccines, and alcohol have ardent advocates they have still more ardent opponents. So we will avoid controversy and agree that we must be doing right if we carefully conserve what natural strength the patient has for the great fight before him. Now is the time for judgment and common sense. Shall the patient remain at home, where adequate nursing seems impossible, or be removed to a hospital replete with every modern convenience? Let each case be judged on its merits, but, speaking generally, I regard a case of pneumonia as the worst possible case for hospital treatment: the distressing journey, the strange surroundings, the proximity of the dying, the noises of the ward, strange foods at strange hours, washing and changing, fatiguing examinations by strange doctors—all these things sap a patient's fighting power and discount the advantages which hospital treatment affords. Personal experience is a most fallacious test in pneumonia, yet I must frankly confess that I have seen recoveries take place in the lowest slums of Birmingham that I should have deemed impossible in hospital. I am inclined to think that a patient with acute pneumonia fights better in the atmosphere to which he is accustomed.

Now how can we spare his strength? By easing pain and giving sleep. Again we must take each case on its merits; a poultice does good and can do no harm if it can be applied without pulling the patient about; but what about morphine? I think there are times when it is safe and times when it is fatal. Cough may be troublesome, yet may be better than no cough; sleeplessness is wearing, yet sleep may be purchased too dearly. Many a time have I begged a patient to make the best of his pain and sleeplessness because I dare not do more to soothe him.

Do you examine the chest in pneumonia? Of course you do; yet who of us can ever remember discovering anything by that examination, say, during the first week, which made the slightest difference to our treatment? A stethoscope applied to the front of the chest hurts no one, but to sit the patient up or turn him over fatigues him, makes him cough, may give him pain, and always increases the pulse rate. A time may come when you may have to look for an empyema, but that is later.

I rather fancy that of all the complications of pneumonia a brisk saline purge on the sixth day is the most fatal. These patients are usually constipated, and unless we can give some adequate reason for interference I fail to see why we should disturb them by aperients or enemata. We all agree that a suitable diet is a light one leaving little residue; abdominal distension is exceptional—why, then, insist on several actions of the bowels during one week? Perhaps it is because few of us have seen how comfortable such a patient may remain whose bowels have not acted between the rigour and the crisis and have not recognized the exhausting effects of a purge.

It is the soundest common sense to cultivate the habit of regarding every case from the patient's point of view. To detect behind some trivial complaints the patient's dread of cancer, serious disease, nay, even death, and be able to send him away cheerful and satisfied, is one of the greatest rewards that fall to our lot. It is common sense which tells us to treat patients and not diseases. It is common sense which enables those of us who are neither very clever nor very

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skilful to attain success by being safe, punctual, and cheerful. Let me end by pointing out the situation when we doctors display our greatest lack of common sense—it is in dealing with our own ailments, especially by neglecting to take ordinary care of ourselves at the onset of common infections. I have seen many tragedies from this cause.—*Brit. Med. Jour.*, January 30, 1926.

DIET FOR SCHOOL-BOYS

Between 1921 and 1925 Dr. H. C. Corry Mann conducted an investigation into diets for boys, and his report has been published by the Medical Research Council.*

Dr. Mann's observations were made at an institution near London, where some six hundred boys are housed under the "villa" system; there are thirty to thirty-five boys in each house, and the rate of sickness is low. During four years records were made by weighing sample rations daily for each of the three meals, thus obtaining minimum and maximum helpings for smaller and larger boys. This was called the basic diet; and it supplied from 1,679 to 2,154 calories daily—37.3 calories per pound of body weight for a boy of 45 pounds, and 35.9 calories per pound of body weight for a boy of 60 pounds. For the purposes of investigation boys of southern English stock were selected, excluding all trace of colour or of foreign, Latin, Scandinavian, or Hebrew type. Their ages varied from seven to eleven years, their weights from 45 to sixty pounds. Any disabilities observed in the boys were due to deficiency of weight and height for age, and not to infective disease. An equal number of the same age and rating was assigned to each of the houses in which the investigations were carried out. After a preliminary period of observation, the group of boys in House I, receiving only the basic diet, were kept under strict observation, and records were made of their general health, gain in weight, and increase in height. In House II each boy received in addition to the basic diet one pint of fresh cow's milk daily. In House III a daily ration of 3 ounces of castor sugar was added to the basic diet; in House IV, 1 ¾ ounces of butter; in Houses V and VI, ½ to ¾ ounces of watercress; in House VII, ¾ ounces of casein, and in House VIII the same amount of vegetable margarine. The object of these researches was to discover whether an increase of height and weight could be best obtained by giving the boys merely more calories by means of the sugar ration, by adding fat alone, by giving fat with vitamin, or by adding vitamin alone. The casein ration was chosen for the purpose of discovering whether improvement in the biological value of the protein might not be more necessary than any other change in the basic diet.

The basic diet in use at the institution contained only a relatively small amount of fat. In a diet of good average quality the fat accounts for 30 to 35 calories. In the basic diet it accounted for only 18. The protein was adequate for growth, although only 25 per cent instead of the normal 35 to 45 per cent was from animal sources. The carbohydrates, consequently, were in excess and accounted for 68 per cent of the calories of the basic diet, as compared with 50 per cent in a good average diet. The caloric value of the basic diet appeared adequate, though an improvement in nutrition would probably occur if the balance and quality were altered. Boys on the basic diet grew an average of 1.84 inches a year, and gained 3.85 pounds, as compared with an average increment of 5.5 pounds observed in healthy school children of the industrial class. The boys who received in addition the cow's milk ration gained an average of 6.98 pounds and grew an average of 2.63 inches. With sugar the average gain was 4.93 pounds per boy and 1.94 inches; with butter 6.30 pounds and 2.22 inches; with margarine 5.21 pounds and 1.84 inches; with casein 4.01 pounds and 1.76 inches; with watercress 5.42 pounds and 1.70 inches. Incidentally, it was found that on all diets there was invariably rather more growth during summer than during winter, and usually more gain in weight. A further point of interest is that the boys who got the extra ration of milk not only did best in weight and height but were "obviously more fit than those of the other groups." There was a general absence of illness. The boys lost the marked tendency to chilblains in the winter, and a roughness of the skin and tendency to pot-belly which were common among those eating only the basic diet. They became far more high-spirited and irrepressible, and for this reason were often in trouble, but there was no indication of greater proficiency at school.

* Medical Research Council, Special Report Series No. 105. *Diets for Boys during the School Age.* By H. C. Corry Mann, O.B.E., M.D. H.M. Stationery Office, London, Manchester, Cardiff, Edinburgh, Belfast; or through any bookseller. Price 2s. 6d. net.

The conclusion reached in the report is that in an institution where there was no deficiency of fresh air or sunshine an immediate improvement in physique followed an alteration in the quality of a diet which was adequate from a physiological standpoint. This improvement was most marked when fresh cow's milk, recently pasteurized, formed the additional item of food; and the improvement, both in weight and height increments, was not temporary but was maintained over a period of one, two, or three years.—*Brit. Med. Jour.*, August 14, 1926.

ON BENZOL POISONING AS AN INDUSTRIAL HAZARD*

As benzol is coming more and more into industrial use physicians, especially those in any way connected with industry and factories, should recognize the hazard its fumes are to health even when present in fractional amounts. Stringent precautions have been taken in all factories both in America and in England where it is manufactured, but when it is employed as a solvent as it is in the rubber industry, in artificial leather making, in sanitary can manufacture, in dry cleaning, and in manipulating paints and varnishes, danger from inhaling its vapour is still very considerable. The vapour of benzol is heavier than air and so displaces it. Air containing 0.5 per cent of benzol will produce confusion within half an hour, and with from 0.6 to 0.9 per cent poisoning may take place within a few hours. Acute cases, however, are rare as compared with chronic cases arising from the inhalation of benzol diffused in the air of an apartment even in small amounts but over long periods. Young girls appear to be particularly susceptible to this chronic poisoning, and in them serious results ensue from exposure to air containing it even in very minute amounts. The usual symptoms are headache, dizziness, palpitation, bleeding gums, frequent menstruation, and blue spots on the arms and legs, with secondary anæmia, the leucocyte-lymphocyte formula being inverted. Nervous symptoms indicating sclerosis of the dorsal columns and pyramidal tracts follow. Leukopenia may be severe, and the red cell count be below 500,000, with hæmoglobin as low as 15 per cent. Animal experiments, carried out by many workers, are for the most part confirmatory of observations on human beings; they bring out that resistance to microbic infections is diminished by benzol poisoning. An effort, confessedly incomplete, was made to ascertain the extent of the benzol hazard in the United States through a questionnaire sent to firms likely to be concerned. By this means 15 fatalities and 83 cases of sickness were traced previous to 1925; 29 compensable cases in the State of Ohio occurred in five years; and seven fatalities during the first nine months of 1925. The Committee next undertook an intensive study under factory conditions of atmospheric pollution by benzol. The method of testing employed was to absorb any benzol vapour present in activated charcoal. Concentrations of solvent vapours were detected varying from 40 parts to 4140 parts per million of air. The blood of 81 persons employed in the atmospheres sampled was examined, and in 26 cases the findings were positive for benzol absorption; the standard chosen was a white cell count of less than 5500 per c.mm. Histories are given in detail of two cases which justified the diagnosis of aplastic anæmia. Undoubtedly as benzol is used to-day it involves a substantial industrial hazard. Even when the concentration is below 100 parts per million all risk is not avoided owing to the great personal idiosyncrasy of some individuals. The use of substitute solvents of less toxicity is the only sure remedy.

* *The Lancet*, 1862, i, 105. Benzol poisoning as an industrial hazard, by L. Greenburg. Public Health Reports, vol. xli, No. 27, pp. 1357-1375, No. 28, pp. 1410-1431, and No. 30, pp. 1516-1539, 1926, Washington: Government Printing Office.

THE NERVOUS SYSTEM OF PLANTS

Sir Jagadish Chandra Bose, F.R.S., the Indian biologist, lecturing at University College, controverted the views of Pfeffer and others that a hydromechanical disturbance or the secretion of an irritant by a wound is necessary for excitation in plants. He said that an excitatory impulse was generated in the plant by a feeble stimulus which caused no wound or any physical disturbance. He found that *Mimosa pudica* could be excited by an electric shock one tenth of the intensity that evoked human sensation. By such a feeble stimulus, which caused no wound and no mechanical disturbance, the plant could be uniformly excited time after time, and the velocity of its nervous impulse determined under

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normal or changed external conditions. The impulse was transmitted not only upward but also downward against the direction of the movement of sap. Cold applied on the path of conduction slowed down and arrested the impulse; narcotics produced a temporary stoppage, and poisons permanently abolished it. He had been able to produce an artificial paralysis in the plant nerve, which was cured by applying the same treatment found effective in the removal of paralysis in the animal. Bose gave demonstrations by means of his "resonant recorder," whereby the plant automatically inscribes the speed of its nervous impulse. He had found the perception or latent period of the motor organ of *Mimosa* to be six one-hundredths second. Fatigue prolonged the latent period; when excessively tired, the plant lost its power of perception, which was regained only after half an hour's absolute rest. In stout specimens the speed of reaction was sluggish, whereas a very thin specimen attained its acme of excitation in a very short time. Bose had been able to localize the plant nerve by two independent methods: first, by the electric probe; and, secondly, by selective staining. He had discovered a highly active and rapidly oxidizable substance in the quickly contractile pulvinus of *Mimosa*, whereas it was absent in the inactive and insensitive pulvinus of the ordinary bean plant. In the leaf stalk of *Mimosa*, four nerves led from the four subpetioles to the four quadrants of the pulvinus, each of which had a distinct motor function. If one of the four subpetioles was stimulated, a definite impulse was sent along the particular nerve to stimulate its own quadrant. But energy was conserved at the centre, and the outlying organs were quickly adjusted to meet any crisis. But one advantage secured by such a highly elaborated nervous system was the co-ordinated reflex by which the leaf surface was adjusted perpendicularly to the incident light, so as to insure the largest amount of radiant energy for photosynthesis. Another important function was the transmission of a rapid message to the motor organ for quick reaction in avoiding threatened danger. Large patches of ground in the tropics are covered by *Mimosa*. When one of the vivid green leaves is trampled on or bitten by grazing cattle, a nervous impulse is sent through the plant, the leaves fall and press themselves against the ground, and the leaflets also close. A patch of vivid green is rapidly transformed into thin lines of dull gray unnoticed against the dark ground. The plant thus saves itself literally by "lying low" and making itself invisible —*London Correspondent, Jour. Am. Med. Assn.*, June 12, 1926.

GOGGLES FOR ULTRA-VIOLET THERAPY

For short exposure to the ultra-violet rays of the arc or mercury-vapour lamp ordinary spectacle glass is, as a rule, sufficient protection; but for operators who may be exposed to the effect of these rays for long periods something more is necessary. Various sorts of protective goggles are on the market, but some of them are not to be recommended. Thus Mr. B. D. H. Watters, of the Middlesex Hospital Physics Department, found that a certain gray glass which was being sold for this purpose transmits a considerable portion of the ultra-violet spectrum, with the result that the operator complained of headache and eye-strain after quite a short exposure. Inasmuch as it may be necessary to protect the eyes against too strong exposure to the visible rays, a shaded or coloured glass will often be preferred. Mr. Watters found that a light green tint served the purpose. The thickness of the glass, and especially of a concave glass, is a factor which should not be left out of account. For the operator it is desirable to secure the maximum amount of visible radiation with a minimum transmission of any rays with a wavelength shorter than 400 $\mu\mu$. For the patient the choice need not be so restricted, partly on account of the short time during which he is exposed to the action of the rays and partly because in his case there is no objection to cutting off some of the visible light. The manufacturers of Arcos glass claim for it a total absorption of ultra-violet, as well as greatly reduced transmission of heat rays, and they supply an easily sterilizable form of goggles.—*The Lancet*, Sept. 18, 1926.

A dinner in honour of Dame Mary Scharlieb was recently given by the London Association of the Medical Women's Federation. Dame Scharlieb, it was pointed out, was over forty years of age before she ever had a scalpel in her hand, and now at eighty-one she was still carrying on her work with unimpaired skill and judgment. High tribute was paid to her high character and pioneer spirit, of which there had been well deserved public recognition.

Scientific Advances

A NEW ULTRA-VIOLET TRANSMITTING GLASS

Numerous attempts have been made toward the development of glasses, or suitable substitutes, capable of transmitting ultra-violet radiations shorter than the region neighbouring 300 $\mu\mu$. The number of possible applications for the use of ultra-violet light, especially full sunlight, has increased markedly during recent years and it has been the absence of materials of a required transparency within a reasonable price which has been largely responsible for their retarded development. Fused quartz glass possesses high transparency, but even with the great improvement in manufacturing methods the cost of covering a limited area is high. At Corning Glass Works there has been developed a new glass, 980A, transmitting to 200 $\mu\mu$ in three mm. thicknesses. Its transmission for wave lengths of 290 $\mu\mu$, the extreme limit of the sun's rays through the atmosphere, is 86 per cent through a two mm. thickness (uncorrected for surface reflections) as measured by the Burea of Standards. For purposes requiring a full transmission of ultra-violet light from the sun, therefore, this glass is practically the equal of clear fused quartz. The glass may be prepared in various colours to produce unusual spectral filters. G985B is a blue transmitting the ultra-violet, but completely eliminating the green mercury line. G984B is green, giving a distinct absorption band in the ultra-violet. G986A is nearly opaque to visible rays, yet quite transparent in ultra-violet. — *Science Supplement,* Sept. 17, 1926.

ABILITY OF DIFFERENT RACIAL TYPES

The tradition that those people who belong to the blond Nordic race are mentally superior to the darker haired types of human being is hard hit by intelligence tests which have been given to 5,500 New England school children of foreign-born parents. The investigation was conducted by Dr. Nathaniel M. Hirsch, formerly a fellow of the National Research Council, with a view to shedding light on national and racial differences in new Americans. Dr. Hirsch strongly attacks the current hypothesis that differences in intelligence of people in this country can be explained on the grounds of their racial types. He points out that during the past 3,000 years, migrations and intermarriages have blended the three distinct European racial types, the fair, long-headed Nordic, the brown haired, round-headed Alpine, and the dark haired, long-headed Mediterranean; so that in no part of Europe to-day is there even approximately a race of one of these pure types. The differences among Europeans of to-day are more national than racial, he finds. Each national group has a distinct personality, as a result of its culture and its heredity, and the different nations show marked differences in intelligence. The children tested were all attending public schools in four factory towns of Massachusetts with the exception of 449 negro children from Tennessee. In a report of the results, just issued, Dr. Hirsch states that Polish Jews averaged the highest intelligence, the next in order being Swedes, English, Russian Jews, Germans, Americans, Lithuanians, Irish, British Canadians, Russians, Poles, Greeks, Italians, Negroes and Portuguese. The intelligence of the national groups showed that there is no connection between high intelligence and the possession of so-called Nordic blood.— *Science Supplement,* Sept. 17, 1926.

A NEW DRUG FOR TREATMENT OF MALARIA*

Malaria, the most obstinate of the tropical diseases in its resistance to the advance of modern medicine, is to have its hold broken at last, by a synthetic drug resembling quinine but much more powerful, produced in the laboratories of the Elberfelder Farbenfabriken.

Quinine, for centuries was the only known specific for malaria and still the standard remedy, does not wholly conquer the disease, especially some tropical forms of it. It is quickly fatal to certain of the malarial parasites, but other strains of the microbes resist it. The new

* Meeting of Association of German Scientists, Düsseldorf. Special cable to *Science.*

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remedy, which has been christened "Plasmochin," kills them all. It is thus regarded as a complete cure, in contrast to the merely partial effectiveness of the extract of natural cinchona bark. Physicians say that there is now hope of killing off malaria germs until they are extinct. With plasmochin the conquest of malaria should be easier than that of yellow fever, in spite of the wider incidence of the former malady. The new remedy is said to be easier to take than quinine because it has no bitter taste. Heavy doses are sometimes followed by cyanosis or blueness of the skin, but this is of brief duration. Upsetting of the stomach rarely occurs, and the patient's blood cells are not attacked. The discovery of plasmochin was not a matter of chance, but the result of a deliberately planned campaign of chemical and biological research. Not one preparation, but several, in a series of increasing potency, were sought.

THE FRENCH GUINEA STATION OF THE PASTEUR INSTITUTE

Professor Albert Calmette, whose tuberculosis experiments have attracted international attention has been instrumental in establishing at Kindia in French Guinea a branch of the Pasteur Institute that is devoted exclusively to experimental work with monkeys. Since captive apes of the higher types nearest man, so necessary in medical experiments with the major diseases, succumb with fatal ease to the plagues of civilization, this laboratory has been fitted up for work with them under the best conditions of their natural environment.

Whole families of monkeys are bred and reared under hygienic conditions, in all other respects as much like their native haunts as possible. Medical experts administer vaccines and serums to protect them against pneumonia and the common diseases that are current among animals in central Africa. Natives collect their customary foods for them from the jungle and scientists watch their intellectual development. In short no effort is spared to keep the ape colony well and happy.

The results have thus far been most gratifying and few animals have been lost from intercurrent infections. The experimental work with monkeys on tuberculosis, which could not be carried out successfully in Paris, because the high prevalence of the disease in the metropolis constantly gave rise to accidental infection, has here gone on with great success. Dr. J. Wilbert, on the staff of the Pasteur Institute at Kindia, has found that not only are chimpanzees quite uninjured by Professor Calmette's anti-tuberculosis vaccine but they fail to contract the disease when placed in isolation with other "patients" in its advanced stages.

The immunity conferred by the vaccine lasts over a year, according to Dr. Wilbert, and can be renewed by fresh doses. The problem that naturally presents itself next is the perfection of a vaccine that will produce more permanent effects.

The Kindia monkeys will be used in experiments, says Professor Calmette, to determine the cause and treatment of all the diseases against which man is not yet effectively armed. Kindia furnishes unrivaled facilities both for the psychologist to observe the family life of chimpanzees and for the physiologist to study the mechanism of their interior, he declares.—*Science Supplement.*

THE ALCOHOL CONTENT OF BREAD

Professor Nicholas Knight and Miss Violet Simpson, chemists at Cornell College, Iowa, reported to the American Chemical Society that they had collected twelve samples of ordinary bread from bakeries and housewives' ovens, and after chemical analyses found that the alcohol content in this prosaic food varied from .04 to 1.9 per cent., the latter quantity being well above the one-half of one per cent limit set by the well-known prohibition statute. The alcohol content of a loaf of bread varies with the kind of yeast used, the time it sets, and the temperature of baking.—*Science Supplement,* Sept. 17, 1926.

A proton, the heart of an atom, would look like a porcelain doorknob if we could see it or its sphere of influence, according to Sir Ernest Rutherford, who showed a model of this tiniest of all objects conceived or known. This bit of positive electricity, as minutely small as astronomical distances are large, if measured in centimeters would have its longest diameter ex-

pressed as the figure eight preceded by twelve ciphers and a decimal point. Weird things happen in these infinitesimal reaches of the universe, for the law of inverse squares, fundamental to our solar system and all astronomy, breaks down. Yet even the proton is probably not simple but a complex structure, not yet reconciled to the new mechanics of Einstein, Bohr, etc. Sir Ernest Rutherford still retains his title as the world's champion alchemist, as the result of a report of W. W. Garrett, an Oxford physicist, who repeated the Miethe experiments of transmuting mercury into gold, with conclusively negative results. Sir Ernest, using alpha particles, the world's speediest projectiles, knocked out of sodium other light metals; these results are unquestioned. Thus the ancient dream of making gold out of baser metals still remains unrealized.

Annual Meetings

THE NINETEENTH ANNUAL MEETING OF THE SASKATCHEWAN MEDICAL ASSOCIATION

The Saskatchewan Medical Association held its nineteenth annual meeting in the University of Saskatchewan, September 20th and 21st. The attendance was approximately one hundred. The total membership of the Association, is approximately 375.

Papers and addresses given at the meeting were of a very high order, and where highly appreciated by those present.

Sir Henry Gauvain of London, England, gave two addresses: one on "The use of heliotherapy" and the other on "Some aspects of surgical tuberculosis." These were illustrated by lantern slides. In addition the following papers were given:

"Treatment of fractures involving the ankle joint," by Dr. Fraser Gurd, Montreal.

"Functional vs. organic disease," and "Nephritis from the standpoint of the general practitioner," by Dr. George C. Hale, London, Ont.

"Common nutritional disturbances of infancy, as observed in practice," by Dr. R. R. McGregor, Kingston, Ont.

"Diagnosis of gastric ulcer," by Dr. F. A. Corbett, Regina.

"Diabetes," by Dr. Lillian A. Chase, Regina.

"The relationship of electrical energy to the medical profession," by Dr. E. E. Shepley, Saskatoon.

"Some points in pædiatrics," by Dr. J. S. Brown, Saskatoon.

"Cardiac arrhythmias," by Dr. W. R. Coles, Regina.

"The campaign in North America against diphtheria, small pox and typhoid fever—the Seymour plan," by Dr. M. M. Seymour, Deputy Minister of Public Health, Regina.

Dr. Geo. S. Cameron, Saskatoon, gave a paper on researches on a new principle which he hopes may prove a heart stimulant. Dr. Cameron is a graduate of 1916 in arts of the University of Saskatchewan; he graduated in medicine from McGill University in 1925. After graduation he returned to McGill for post-graduate study being engaged in research work. For the past two or three months he has continued his research work at the University of Saskatchewan. It is hoped that the new discovery may prove of great benefit in the treatment of heart cases. A full report will appear in the *Journal* shortly.

At noon on the first day, the members attending the meeting had luncheon together at the Hudson's Bay restaurant. At 7 p.m. the same day a complimentary banquet was given by the medical men of Saskatoon, in the King George Hotel banquet room.

There was also a reception for the ladies at the home of Mrs. A. F. Malloy on the afternoon of the first day and a dinner followed by bridge in the evening. On the second day the ladies had luncheon at the City Golf Club, followed by golf and bridge.

The officers elected at the annual meeting were as follows:

Hon. President.—Dr. W. A. Harvie, Regina.
President.—Dr. R. R. Stirrett, Swift Current.
1st Vice-Pres.—Dr. V. E. Black, Moose Jaw.
2nd Vice-Pres.—Dr. J. J. Hamelin, North Battleford.
Gen. Sec. Treas.—Dr. A. MacG. Young, Saskatoon.

The invitation of the Moose Jaw District Medical Society to hold the annual meeting at Moose Jaw next year was accepted.

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Abstracts from Current Literature

MEDICINE

The Rate of Urea Excretion as a Test of Renal Function by Means of a Modification of McLean's Index. Kawahara, S., *Arch. Int. Med.*, July, 1926.

A method is described for the estimation of urea in the blood using a modification of Bahlmann's micromethod.

The index of urea excretion varies in normal persons usually between 80 and 200. Those cases of nephritis in which the patients were in a serious condition showed a low index varying from 1 to 35. In cases in which the patients were convalescing from nephritis or were in an improved state the index was normal or nearly so.

In the cases of heart failure the index was low in the state of severe decompensation. When digitalis had increased the diuresis and caused the disappearance of the œdema, the index was normal.

McLean's index is practicable as a test of renal function, although for repeated examinations its value is enhanced by the use of Bahlmann's micromethod for urea determination. The procedure is adaptable to clinical use since it is not necessary to keep the diet constant on account of it. If the index shows a normal value the protein in the diet need not be so rigidly restricted as otherwise. LILLIAN A. CHASE

The Pharmacology and Therapeutics of Novasurol. Serby, A. M., *Arch. Int. Med.*, September, 1926.

Novasurol contains 33.9 per cent of mercury and is prepared in a 10 per cent aqueous solution. It was introduced in 1917 as an antisyphilitic. Whether its diuretic action is extrarenal or due to direct renal stimulation has been discussed since 1920. The diuretic action has been best marked in cases of decompensation accompanied by high blood pressure and cyanosis. In renal œdema, novasurol is a distinct menace and will increase kidney damage. The ill effects are gingivitis, hæmorrhagic benign colitis, and occasionally renal damage. Saline cathartics should not be administered with novasurol.

Six cases of marked cardiac decompensation were studied. Salt was restricted to 2 or 3 grm. daily. Fluid intake was limited and measured. The patients were given treatment of rest in bed, digitalization and restriction of fluids and salt before novasurol was begun. In some cases digitalis was continued with the novasurol. Apparently all cases of cardiac decompensation except those complicated with severe renal infection or damage may be benefited by the judicious administration of this substance. Because of its toxicity novasurol should not be used until the usual measures, rest in bed, digitalis and restricted fluids have been exhausted. There is proof that, if not properly controlled, it is injurious both to the kidney and liver.

The drug produces first a dilution and later a concentration of the blood that reaches its peak in twenty-four hours. The increase in blood volume causes the early diuresis. Later, the drug stimulates the kidney to produce the urinary increase.

1 c.c. of novasurol intramuscularly or intravenously twice weekly in persistent cardiac œdema will cause profuse diuresis. The appearance of toxicity may be noted by bilirubin determinations. Novasurol may cause renal damage and should not be used in the face of nitrogen retention and lessened urinary output. Diuresis appears three hours after administration; it lasts twelve hours in young individuals, and twenty-four to forty-eight hours in elderly and weak individuals. The drug may induce a decrease in anasarca and an increase in uræmia simultaneously. In some cases, novasurol may not cause diuresis, although not producing any renal change. LILLIAN A. CHASE

Rheumatic Affections. Some Observations on Their Treatment. Orr, J. Leslie, *Brit. Med. Jour.*, May, 1926, 1, 782.

In acute rheumatic fever the majority of cases do favourably with rest in bed between blankets, taking salicylates. But in the cases that do not respond to these measures cultures should be taken from the throat, the teeth and from the fluid withdrawn from any swollen joint. The author has found a long type of

streptococcus from which an autogenous vaccine was made. There was a reaction after the first dose but marked improvement resulted within two weeks. The early use of an autogenous vaccine reduces the tendency to cardiac and other complications. W. J. McNALLY

Subacute Bacterial Endocarditis. Bierring, W. L., *Jour. Am. Med. Ass.*, 1926, lxxxvii, 464.

The writer points out that there seems to be a renewal of interest in this subject, probably because of the increase in the disease after the war, and the several severe pandemics of influenza of the last decade. He gives a clear account of the condition, and discusses the subject under four headings, *viz*: (1) the etiological significance of a pre-existing valve lesion; (2) types of infection and infective foci; (3) characteristic clinical picture, and (4) prognosis and treatment. It is with the last heading that this abstract will be concerned.

The prognosis is held to be of great importance. Most cases appear to be mildly innocent at the onset, and there is a temptation to regard them lightly, yet death is the usual termination. Only a small number of recoveries are reported: Libman, for example, describes four out of a series of nearly 300: Sir Thomas Horder has the same number out of his series. In the group under discussion (numbering thirty) one recovery is recorded.

The disease is liable to distinct remissions, and this must be taken into account, as well as the fact that healing of the affected areas in the heart may occur, and still the case terminate fatally.

As regards treatment, immunotherapy has been given a prominent place, since this is distinctly an infective process, but, unfortunately the various forms of vaccine treatment have not given appreciable results. It has been proposed that transfusion donors be first immunized with a causative streptococcus, but there are no reports of results with such methods. Mention is made of a large number of drugs, with special emphasis on the use of intravenous injections of sodium cacodylate. Two reasons for use of this drug are: (1) that it is known that arsenic is retained for a long time in the serum and other body fluids, and (2) that it has been shown experimentally that weak arsenical solutions inhibit the growth of low grade virulent streptococci. Transfusions of blood were employed in this series, especially where the percentage of hæmoglobin was low; and some improvement was noted, with disappearance in a few cases of bacteria from the blood stream for a short time.

A successful or specific form of therapy, however, has yet to be found, and in the meantime it is held that the preventive measures for which such a strong plea is being made to-day, should receive prominent consideration. If it were possible to prevent acute rheumatism, most of these cases of endocarditis would not occur at all.

H. E. MacDERMOT

Vertigo. Mills, A. E., *Med. Jour. Australia*, (Transactions of Congress), June 14 and 21, 1924.

The author at the outset of his paper emphasizes the point that every symptom should be thoroughly studied in order that its true cause and significance may be determined. Vertigo being a subjective symptom can only be estimated objectively by the amount of equilibrial disturbance that it causes. Since equilibrium is dependent upon impulses from the eyes, and the labyrinth, from muscles, joints and tendons, and from the skin, any dissociation in the impulses from these different receptors will cause vertigo and a disturbance of equilibrium. When this dissociation of impulses reaches consciousness, vertigo results. Vertigo most commonly results from some interference with impulses from the labyrinth. This interference may be in the internal ear along the nerve, or with the vestibular nuclei or their intracranial connections. Normally the labyrinth is very sensitive and responds to slight movements of the head but the slight postural reflexes resulting do not affect consciousness. However, if the labyrinthine irritation is severe, as from the caloric test, we are conscious of the disturbance and have vertigo. The author concludes that since the labyrinth is so sensitive to pressure changes it is probably the most common site of causes inducing vertigo. If the vestibular tract is diseased, it may become more irritable and therefore respond more readily to stimuli and so slight ones may cause vertigo. In addition to increased irritability of nerve receptors from toxic agents, anoxæmia resulting from deficient blood supply may act in the same way.

When vertigo is found in some cases of high

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blood pressure it probably occurs in those cases where there is some vessel change causing an anoxæmia, the mere fact that the blood pressure is high will seldom give rise to it.

The toxicity of tobacco may determine an attack of vertigo. Also the toxins from infectious disease.

When a patient falls from vertigo the author believes that it is partly due to a lowering of muscle tonus from the labyrinth itself and partly due to the elaborate effort of the patient to counteract the imaginary tendency to fall in the opposite direction with the result that he actually does fall but in the opposite direction to that imagined.

When considering whether Eustachian obstruction may of itself cause vertigo the author points out that many cases with bilateral Eustachian obstruction do not have vertigo. He believes that the vertigo is more likely to be due to a temporary hyperirritability of the labyrinthine terminations brought about by a vascular change inducing an anoxæmia. He describes a case suffering from frequent attacks of vertigo and tinnitus which were never present during exercise. Relieving a Eustachian obstruction did not help or relieve the attacks. It was found that an attack could be relieved or forestalled by vigorous exercise, presumably increasing the heart action and improving the circulation to the labyrinth.

In his summary the author states that the most frequent cause of vertigo is a disturbance of the labyrinth, either an excessive stimulation of a normal labyrinth, or a slight stimulation of a hypersensitive labyrinth. The hypersensitivity may be brought about by anoxæmia from imperfect blood supply, or from toxic products generally; that vertigo is not due to high blood pressure or to Eustachian obstruction *per se*.

W. J. McNALLY

On the Rotated or Cerebellar Posture of the Head. Brain, W. R., *Brain*, March, 1926, xlix, 60.

Batten in 1903 was the first to describe this rotation and flexion of the head to one side as the "cerebellar" posture. In the present paper the posture is designated by the side to which the occiput is turned. This posture has been at different times associated with different intracranial lesions, but there was no uniformity of opinion as to its diagnostic value until Horsley in 1910 associated it with the vestibule. The author believes that it is essentially vestibular, but believes that it may be also due to lesions outside the internal ear. A series of fifteen cases are reported in detail. Ewald first described this head posture experimentally, but Magnus and de Kleijn gave the first comprehensive explanation of the association between unilateral labyrinthectomy and rotation and flexion of the head to the same side. They contend that this posture is due to a loss of the afferent impulses from the utricular macula on the affected side to the muscles on the opposite side of the neck. It was found by Muskens that lesions of the pons and mid-brain and fore-brain resulted in this rotated posture of the head but the rotation may be either to the side of the lesion or to the opposite side.

There are five cases of inner ear lesions reported where there was a rotation and flexion of the head to the side of the lesion. If, as in some of these cases, the rotation tests are normal it would suggest that the rotated posture is due to some impairment of the utricular macula on the affected side. Lesions of the eighth nerve also cause a rotation to the side of the lesion. In five cases of lesion of the pons, where the lesion was fairly confined to one side, the rotation and flexion of the head was to the opposite side. A lesion of the cerebellum, according to the best evidence, cannot of itself cause a rotated position of the head, but it will depend on whether the lesion presses upon the eighth nerve when the rotation is to the same side, or whether the pressure is upon the pons, when the rotation will be most likely to the opposite side of the lesion.

To sum up: the author regards the rotated posture of the head to be due to an interference with a tonic reflex from the utricular macula on the affected side to the muscles on the opposite side of the neck. Experimentally, rotation may be brought about on the side of the lesion by labyrinthectomy and section of the eighth nerve; a lesion of the pons or mid-brain and fore-brain may cause a rotation either to the side of the lesion or to the opposite side. Clinically, otitis interna and acoustic tumours cause rotation to the side of the lesion. Five cases of lesion of one side of the pons caused a rotation

and flexion to the side opposite to the lesion. Tumours of the cerebellum may, by pressure, cause a rotation of the head to either side.

W. J. McNALLY

PÆDIATRICS

Aspiration of Zinc Stearate in Infancy. Rosenson, W., *Arch. Pædiat.*, June, 1926.

The danger of using zinc stearate in the nursery has been widely recognized during recent years. Accidents occur almost invariably in the same way. While lying on his back and playing with the box of powder a shower of powder falls on the infant's face and is immediately inhaled into the bronchial tubes. Asphyxiation results, which may end fatally in a few hours. The majority of cases, however, do not show this violent reaction, but a bronchopneumonia sets in very shortly and may or may not end fatally. The mortality is said to be about 20 per cent. Treatment consists of giving an emetic followed by gastric lavage, and then treating symptoms as they arise.

Prevention should include educating the mothers not to use zinc stearate which seems to have little to justify its use, and recommending that manufacturers should use an automatic self-closing container for the powder.

These were the conclusions arrived at by the commission appointed by the American Medical Association to investigate this menace to infants.

L. M. LINDSAY

DERMATOLOGY

Codein Exanthem. Dittrich, Otto, *Archiv für Derm. and Syph.*, Feb., 1926.

Cases of codein exanthem are of somewhat rare occurrence. Two cases, which presented different manifestations, are reported by the author.

One patient with frank tuberculosis of the lungs was given codein tablets on account of cough. At the end of the second week a micropapular follicular inflammatory eruption developed on the abdomen, chest, back (midline), and extensor surfaces of the thighs and legs. Biopsy of an affected follicle showed a simple inflammatory dermatitis in the papillary body, with some leucocytic infiltration, widening of the lymph spaces and blood vessels and œdema.

The follicles were active in a secretory capacity, and were supplied with numerous blood vessels. The codein which was circulating in the blood unchanged was carried to the follicles and deposited there, so setting up in them the reaction which led to the appearance of the eruption.

The second case was that of a patient, a subject of seborrhœic eczema, who on account of mild cough, was given codein tablets. The next morning an intense itching dermatitis had developed on the face, body and extensor surface of the limbs. Blepharitis was present. The blood pressure was 109/70; the cell count was not materially changed. The eruption resembled that of scarlet fever. After four days the rash faded. The patient was then given 0.01 grm. codein phosphate. In six hours an acute lighting up of the rash occurred. Urine and blood pressure were normal. A mild leucocytosis of 12,000 and eosinophilia of 12 per cent was noted after the onset of the eruption.

This eruption was due, apparently, to a true hypersensitiveness on the part of the patient, the drug apparently acting reflexly through a central mechanism on the vaso-motor nerve endings.

J. F. BURGESS

SURGERY

New Phases of the Physiology of the Biliary Tract. Graham, Evarts A., and Cole, Copher, and Kodama, *Ann. Surg.*, Sept., 1926.

The gall-bladder has two functions, the regulation of biliary tract pressure and bile concentration. The question of how the gall-bladder empties itself has aroused interest only during recent years. Only one surgeon has ever noted a definite gall-bladder contraction during an abdominal operation. Since the advent of improved methods of radiography numerous experiments have been carried out to visualize contractions, but up to the present none have been seen. Copher and Kodama have in experiments substituted a small rubber bag in place of the gall-bladder and have found that it behaves in every way like a normal gall-bladder except for concentration. This brings out the inference that the connective tissue of the gall-bladder has a great deal to do with the emptying of the organ. This of course is supplemented by intra-abdominal pressure. The authors further assert that the sphincter-like mechanism at the end of the common duct is dependent on intestinal toxicity, and that discharge of bile occurs in the

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relaxation phase of duodenal peristalsis. Speaking of cholecystography as an aid in experimental and clinical work, the authors point out that it may fail in usefulness for one of three reasons: (1) insufficient amount of substance reaching the liver; (2) inability of liver to secrete; (3) failure of the gall-bladder to concentrate. Failure of the liver to secrete may be disregarded, for livers extensively damaged have been found to excrete normally. The intravenous method of administration is regarded as best, and in a series of 150 cases correct diagnoses is given in 97 per cent as compared with 75 per cent in oral administration.

R. V. B. SHIER

The Operative Management of Common Duct Stones. Crile, Geo. W., *Ann. of Surg.*, Sept., 1926.

Operations on the common bile duct are formidable and risky even in the hands of experts with perfect technique. The author compares these operations with those for brain tumour and goes on to make comparisons between the two organs, the brain and liver, particularly in the sensitiveness to variations in temperature. Within the field of common duct operations lies the "brain" of the sympathetic system, which supplies organs whose function is essential to life. Every liver cell has its own nerve supply, and a network of fibres from the sympathetic surrounds every blood vessel, capillary and duct in the liver. In view of these facts a vigorous aggressive operation on the common duct corresponds to a digital search in the brain substance. To prevent this shock-like disturbance to liver function and the body as whole, Crile points out the advantages of regional local anæsthetic and splanchnic blocking with novocaine when feasible. This is supplemented by keen knife dissection and suction apparatus to keep a clear field and avoid the trauma of sponging.

To prevent nerve injury following operation by drainage around the sympathetic a drain through the flank to Morrison's pouch is advocated. The common duct should be closed and not drained and the gravity drain to Morrison's pouch used, thereby doing away with the sudden release of pressure in the liver cells in jaundiced patients.

Experimentally it has been shown at the Cleveland Clinic that the heat changes in the liver and brain are synchronous. The conclusion is that the application of heat to the liver should largely counteract the effect of operation on that organ and its bile ducts. Diathermy has been put to practical use in Cleveland by placing one plate posteriorly in the lower right chest and anteriorly over the dome of the liver. The author predicts a future for liver and bile duct surgery comparable to that now enjoyed by brain and thyroid surgery.

R. V. B. SHIER

Recovery From Tubal Deafness Caused by a Sarcoma. Lodge, Samuel and Lodge, William O., *Brit. Med. Jour.*, May, 1926, ii, 826.

After removing a sarcoma from the soft palate a unilateral deafness of eight years standing cleared up. The question is raised as to what is the pathology in the ear in these cases. Brock found in three cases of obliteration of the Eustachian tube from tumours that there was a serous exudate in the tympanic cavity attributable to *hydrops ex vacuo* rather than to inflammation. Karl Beck obliterated the Eustachian tube in dogs by cauterization. He found hypertrophy and cellular infiltration of the mucous membrane and a sterile exudate. According to Habermann this condition differs from chronic catarrh of the middle ear in which the proliferative changes in the tympanic mucosa are identical with those of hypertrophic rhinitis. In the case being reported there were no subjective symptoms of fluid in the tympanic cavity, nor could fluid be seen through the drum.

W. J. MCNALLY

Burns Treated by Tannic Acid. Beck, C. S., and Powers, J. H., *Ann. of Surg.*, July, 1926.

The treatment of burns by the application of 2½ per cent fresh aqueous solution of tannic acid has been a distinct advance. E. C. Davidson, who first advocated this method, came to the following conclusions: that the method lessened toxæmia, that if after a tannic acid coagulation, wet boracic acid compresses were applied, toxic symptoms returned; that tannic acid was analgæsic and prevented loss of body fluid; that dessication is unfavourable to bacterial growth and secondary infection; and that scar tissue formation was less by this method. A detailed account of Davidson's original technique is given. The authors go on to say that coagulation should be produced as soon as possible, and

with this end in view use a fine spray of the solution every half hour, until the surface becomes brownish black, which usually occurs in sixteen hours. The burn is left exposed to air and dry heat, while blebs are opened and separated epidermis removed. Toxæmia disappears in from three to five days, and the crust should not be disturbed until it separates in about two weeks. In deep burns it may be advisable to remove it after this time and skin graft in part at least.

After presenting a series of cases, the authors assert that the most striking features of the method are the control of toxæmia, the simplicity of the method, and the comfort of the patient. The blood chemistry assumes a normal level in about five days. If serum and pus collect beneath the crust, the latter should be removed. The crust in deep burns dries slowly, hence toxæmia is more marked in these cases, for if the coagulum is dry no absorption can take place.

The care during convalescence is a very simple matter, and the patient is quite free from pain, the tanned burned area being protected by a cradle covered with a sterile sheet.

R. V. B. Shier

ANÆSTHESIA

Technique de la Rachianiesthésie Generalizée. Jonnesco, T., *La Presse Medicale*, February 3, 1926, 145.

Jonnesco has used spinal anæsthesia in all his operations during the last twenty years, without an accident and without a death. He uses stovaine combined with caffeine and sodium benzoate and varies the dose to suit the patient. Patients debilitated by hæmorrhage, shock, cachexia or infection and especially those suffering from cancer can be anæsthetized by doses which would be quite ineffectual if they were in good general condition. There are three sites for injection: (1) the superior cervico-dorsal between the seventh cervical vertebra and the first dorsal, or between the first and second dorsal; (2) the dorso-lumbar between the twelfth dorsal and the first lumbar, which produces "intermediate" anæsthesia; and (3) the inferior lumbar between the fourth and the fifth lumbar. According to the site, high, intermediate or low anæsthesia is obtained.

The high injection is the most easy, the most certain, and the most useful. While anæsthesia is perfect, the sense of touch and the power of movement in the muscles of the larynx, pharynx and mouth are retained so that the patient can defend himself against the entrance of blood into the respiratory tract. The anæsthesia persists so long that the writer has been able to remove the upper jaw at one operation.

Intermediate anæsthesia is used in operations on the upper abdomen. When the injection has been made, it may be necessary to lower the head for a few seconds if the line of anæsthesia does not rise quickly.

In extensive operations for the removal of the breast Jonnesco gives two injections at the same time, one in the cervico-dorsal and the other in the dorso-lumbar region. This obviates the necessity of giving too large a dose at one site. One-third of the dose is given at the upper site and two-thirds at the lower. In gynæcological operations dorso-lumbar and inferior lumbar injections are combined. W. B. Howell

On the Effects of Acetaldehyde, Ether Peroxide, Ethyl Mercaptan, Ethyl Sulphide and Several Ketones—Di-methyl, Ethyl Methyl and Di-ethyl—When Added to Anæsthetic Ether. Bourne, Wesley, *Jour. Pharmacol. & Exper. Therap.*, 1926, xxviii, (3) 409-432, 17 pl.

The actions of these compounds when mixed with anæsthetic ether on blood pressure and respiration were studied in the dog. Recovery was observed for several days. Old as well as freshly distilled acetaldehyde up to 0.5 per cent did not produce any significant changes. With one per cent there was marked respiratory embarrassment and consequent and concomitant effects on blood pressure; however, the animals recovered well.

One half of one per cent of ether peroxide which was prepared according to the procedure of Wieland and Wingler produced a decided lowering of the blood pressure and pronounced respiratory disturbance. Three-tenths of a per cent, even after prolonged administration, did not noticeably affect the animal. Ethyl mercaptan did not have much influence when present up to one per cent. Ethyl sulphide in 1 per cent concentrations produced an extremely severe gastro-enteritis. With three-tenths of a per cent or less no such effect was caused and the blood pressure and respiration were not altered.

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It is pointed out that ether would have to be exceedingly impure to contain as much as the smallest noted amounts of any of these substances.

Di-ethyl ketone, ethyl methyl ketone and acetone were apparently indifferent in concentrations up to 5 per cent. WESLEY BOURNE

Clinical Lecture on Intratracheal Anæsthesia. Rowbotham, Stanley, *Lancet*, September, 1926, 583.

The ordinary technique and purposes of intratracheal anæsthesia are described and in addition some improvements which have been adopted by the lecturer. He introduces two tubes into the trachea, the second one, larger than the first, is for the return flow of air. This does away with the bubbling of air through blood and with obstruction of the airway due to falling back of the tongue. Respiration is easy and quiet. The pharynx can be packed to prevent blood getting into the trachea. In operations on the mouth the tubes can be passed through the nose. Rowbotham sometimes passes a single tube of fairly large size into the trachea and allows the patient to breathe backwards and forwards through it. With this tube in place the pharynx can be plugged and, if required, gas and oxygen may be administered. W. B. HOWELL

Liever Kyning! Wass Heal!—The origin of the custom of one person drinking to another's health may properly be of interest to the medical profession.

It is related in British history that a great feast was given by the Saxon chieftains, Hengist and Horsa, to the British king, Vortigern. The historian sets forth the designing nature of the hosts and the political significance of the event, and from the methods adopted by the Saxon brothers, we may conclude that they were close students of human nature as well as great warriors. True, they did but follow Saxon custom in giving their sister, Rowena, a seat of honour at the feast, but perhaps design, rather than accident, placed her directly under the eyes of the British king, who at once fell victim to her entrancing beauty.

The feast progressed very happily. What with eating heartily, and drinking well, and altogether intoxicated by the beauty of Rowena, Vortigern was soon in glorious mood. The climax came when Rowena, possibly having partaken of the glowing wine and having lost somewhat the inhibitions of maidenly modesty, arose from her place, and having filled a tankard with wine, approached the king, gave the vessel to him, saying in the Saxon tongue, "Liever Kyning! Wass heal;" that is, "Dear King! your Health!" Vortigern, agreeably surprised, answered her in the British tongue to the effect "Do you yourself drink the health!" Whereupon Rowena, just putting the cup to her lips, presented it to the king, who, taking it, immediately rose and in like manner saluted her. Rowena, as sensible of the great honour done her, made a profound reverence, and withdrew from the feast. In his *History of England*, Rapin states, "In this historical incident, it is generally understood that the custom of drinking healths in this country originated."

M. G. BURRIS

Civilization originated in either Sumeria or Egypt, according to Professor S. Langdon, the archeologist. His opinion is the result of excavations conducted under the joint auspices of the Oxford Museum and the Field Museum of Natural History of Chicago. Excavations at Kish and Jemdet Nasr, ancient Sumerian cities, brought evidence of the great antiquity of Sumerian civilization, including the earliest known monochrome and polychrome painted ware. In Sumeria pictographic tablets, seals and copper objects of many kinds abounded, the oldest of inascertainable antiquity, the most recent ones definitely dated at three thousand years before the Christian era. Evidence shows that both in Sumeria and in Egypt the best art was always produced at the beginning of an era.

C. Leonard Woolley, director of the joint expedition of the British Museum and the University of Pennsylvania Museum, reported the latest results of excavations at Ur of the Chaldees, which figures in the Old Testament as Abraham's home town. In the great temple there he found the soil riddled with vertical terra-cotta drain pipes.

Obituaries

Dr. Tancrede Boucher de Grosbois of Montreal died recently at his residence, in his eightieth year. His death marks the passing of one of the oldest actively practising physicians of Montreal. Dr. de Grosbois, who for the past twenty-three years has been on the staff of the St. Jean de Dieu Hospital, was actively engaged in his duties up to almost the time of his passing. He was born at Chambly, November 6, 1846 and was educated at private schools, St. Hyacinthe College, and McGill University, from which he graduated in medicine.

Dr. William Edmund Daley. In the death of Dr. William E. Daley, the Halifax profession has lost one of its younger members, one who gave every promise of a useful and successful career. Some months ago he was injured in a motoring accident, since which he has never been quite well, although able to carry on his practice. His death occurred, after a brief illness, on the twenty-ninth of September. He was born in 1897, and graduated at Dalhousie in 1920.

Dr. John Dunfield forty-eight years in practice died in Petrolea early in October. Though in his seventy-eighth year Dr. Dunfield had continued his practice without interruption since 1878. In addition to his professional activities the doctor was keenly interested in municipal and educational affairs and had held the positions of mayor of the town and chairman of the board of education.

Dr. James Henderson died at Ingersoll on September the 26th. One of the veterans of the profession, Dr. Henderson graduated from the Long Island College of Medicine in 1866, practised in Michigan for years and retired on account of ill health to his old district about Ingersoll. Though an invalid for years the doctor had devoted his time to literary work and was a regular contributor to various American publications. He was the author of an interesting collection of poems dealing largely with the conditions of the country life of the Oxford neighbourhood.

Dr. E. A. LaGesse of St. Basile, died on September 23rd. His death followed a fracture of the hip.

Dr. Harry B. Lawson, of Lord's Cove, Deer Island, died on September 27. Dr. Lawson was the eldest son of the late Dr. J. J. Lawson of St. Stephen. He served with the Imperial Army in the Medical Corps during the Great War. After the war he was stationed in Fredericton with the D.S.C.R. His death is regretted by many friends.

Dr. J. McCullough died in Lindsay on October the fifth after a long illness. A detail of McCullough's life and activities will appear in a later issue. Only in his fifty-fifth year, an untiring worker, a brilliant surgeon, Dr. McCullough had seen his end approaching, but resolutely refused to suspend activities till within the last six months.

Dr. Emanuel Oscar McDonald, of Glace Bay, Nova Scotia, died on the fifth of October. Dr. McDonald graduated at Trinity University in 1900. He was physician to the colliery at New Aberdeen, near Glace Bay, and made his home there although, as a specialist in the eye, ear, nose and throat, his office was at Glace Bay. He enjoyed a large practice, and was greatly esteemed for his many good qualities as a citizen and a physician.

Dr. L. N. McKechnie. It is with much regret that we record the death of Dr. McKechnie of Vancouver, which occurred after a long illness on October 3rd. Dr. McKechnie was a graduate of Toronto University and settled in British Columbia in 1894.

Dr. Augustus Robinson died at his home, Annapolis Royal, on the sixteenth of September. Although upwards of ninety years of age, he had been actively engaged in practice until within ten days of his death. Born January 11, 1836, he graduated at the University of Pennsylvania in 1857, and was admitted to membership in the Royal College of Surgeons the following year. In 1861 he began practice at Annapolis Royal and, except for periods at post-graduate work (he obtained the L.S.A., London, in 1863), was very actively engaged until 1903, when he went to Alberta. A few years later he returned to Annapolis Royal and resumed practice. His professional career thus extended over sixty-nine years. Despite his age, he was remarkable for his vigour, his sustained interest in all professional and public matters, and his clearness of intellect. Until within a year or two ago he never hesitated to respond to a call, even though it might involve a long drive in the worst of weather. His ideals were of the highest, and he delighted in placing himself at the service of others. Big in body and in heart, overflowing with optimism and cheeriness, enthusiastically devoted to his profession and yet most catholic in his interests, he was held in the affectionate esteem of all with whom he came in contact. For seven successive years he was mayor of his town. He took an active part in the work of his church, was prominent in masonic circles and in the Annapolis Historical Society, and was ever a good citizen. On many occasions the admiration and love of his fellow townsmen were shown in some conspicuous manner, notably in the celebration of his birthdays—which of late years were almost fete-days in his town. He was revered by his professional associates, to whom he was always a wise counsellor and the best of friends, and by whom his death is sincerely mourned. Scarcely more than a week after the doctor's death, Mrs. Robinson, for many years the doctor's faithful helpmeet, also passed away.

Dr. G. C. Rowe died in Toronto on September 24, in his seventy-second year. A graduate of the Toronto School of Medicine of the year 1879, Dr. Rowe had practised at first in Georgetown, but later on in Toronto, where he lived for nearly forty years. He was an enthusiastic mason and had been connected with various civic organizations, sitting as alderman on the council.

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News Items

ACKNOWLEDGEMENTS

We beg to acknowledge receipt of the folder containing the publications of the State of Maryland Department of Public Health. The material is all good, as one would expect from a department of which Dr J. H. M. Knox is head. The most noticeable thing about this literature is its completeness. There seems to be a form and literature available for every conceivable phase of Public Health as it concerns Child Hygiene. Included in the material are some very valuable physical examination forms for use at Prenatal Clinics as well as for the Pre-school Child clinics.

The information for mothers is unusually well written, in a volume of one hundred pages which includes excellent little articles written in such a way as to be interesting to even the poorly educated woman who is anxious to get information about her baby.

L'Action Medicale (September, 1926) publishes the list of those recently elected as Governors of the College of Medicine and Surgery, Province of Quebec, and points out that the incoming board only contains four of the old members. Much is expected of the new governors, according to L'Action Medicale. Amongst the subjects mentioned as requiring their attention are, reciprocity with Great Britain, the federal license, and the Canadian Medical Association. It states that it will also be necessary to examine the proposed federation of medical societies, as suggested by the Medical Society of Arthabaska.

We have received the August number of the *Bulletin Medical de Quebec*, and note elsewhere the news contained therein of the election of governors for the College of Medicine and Surgery of the Province of Quebec.

In addition to this we note some useful and well presented contributions, together with much information of general interest.

GREAT BRITAIN

British Association Sues London Newspaper

Certain newspapers of London, England, published comments, September 2, on the attitude of the British Medical Association with regard to publicity by physicians, and two of these comments, in the opinion of the solicitor of the association, constituted libel. The two papers were informed by the association that unless they published forthwith an apology and expression of regret in terms to be approved by the British Medical Association, proceedings would be instituted against them. One newspaper promptly complied, and its apology was accepted. No apology was forthcoming, however, from the other newspaper, and the association issued a writ against its printers and publishers.

Cambridge Medical Society in America

Seventy-eight members of the Cambridge University Medical Society have been visiting the United States and Canada during the past month and have returned full of enthusiasm at their reception. All but two of the party were students or had lately qualified, and their object was to get an idea of the methods and ideals of American education by visiting universities and hospitals. Nothing quite like this has been done before, and it is satisfactory that the experiment was a complete success. Only twenty-three days were spent ashore, but an incredible amount was seen and done, thanks to the careful planning of details and the unfailing kindness of the Society's American hosts in every city. The following places were visited: Montreal (McGill University, Royal Victoria and General Hospitals); Kingston University; Toronto (University, Children's and General Hospitals, and the Insulin Building); Niagara; Washington (Hygienic Laboratory, Surgeon-General's Library, Walter Reed and Naval Hospitals); Baltimore (Johns Hopkins Hospital); Philadelphia (University of Pennsylvania Hospital); New York (Columbia University and new medical building, Rockefeller Foundation, Bellevue Hospital, and Cornell Medical School); New Haven (Yale University and General Hospital); and Boston (Harvard University, Peter Bent Brigham, Boston Lying-in, Children's Psychopathic, City and Massachusetts General Hospitals). Various methods of demonstration were adopted. Sometimes special emphasis was laid on equipment and organization. In other cases series of short clinical lectures, demonstrations, or surgical operations were utilized to illustrate the work being done in the hospitals or the method of teaching adopted. It was always feasible for those specially interested in any particular branch of medicine to follow their own bent, and for the whole party to meet members of the faculties, who put themselves at their service—as one of the visitors expresses it—in a way that would have honoured far more distinguished guests. Time was also found for sight-seeing, and there were social occasions described as peculiarly delightful. Some appreciation of American and Canadian outlook and ideals must have been gained by everyone, and the experience will be of great value to each member of the party as an individual. All members of the Society have come home full of gratitude for the kindness and hospitality they have received and anxious to do anything they can for American and Canadian students, and especially for medical students visiting their country.

Sir Frederick Walker Mott, honorary director of the Research Board on Mental Diseases for the City and University of Birmingham, has left the residue of his estate, subject to certain trusts, failing which, with remainder to the University of London for the endowment of a professorship of psychological medicine "at my Alma Mater," the Medical School of University College Hospital, stating that he did not wish the professorship to be founded until there should be sufficient accommodation for the study and treatment of early cases of mental disorder either by wards in University College Hospital or in an affiliated mental hospital.

A bequest amounting to nearly £100,000, which is

to be divided between the University College of Wales, Aberystwyth and the National Library of Wales, is made in the will of the late Sir John Williams, of Blaenllynant, Aberystwyth. In addition, gifts of £1,550 and of pictures, books and MSS. are made to the latter of these institutions.

AUSTRALIA

The profession in Australia has had to consider three reports of considerable importance. These are, the interim report of the Royal Commission on National Insurance; the report of the Royal Commission on Health; and the report of Dr. McEachern on the hospitals of Victoria and New South Wales. We quote below, in part, the comments of Dr. R. B. Wade, retiring President of the N.S.W. Branch of the British Medical Association:

"One feels as political feeling at present runs in this country, that some scheme of national insurance is inevitable and it seems to be the general opinion in the United Kingdom that, though the scheme at work there has brought about great improvements, it still is not ideal, and that it should include some scheme with widespread provisions for the prevention of disease. We are in consequence pleased to find the recommendations of the Commission are on these lines; the main findings may be summarized as follows. The Commissioners are of the opinion that casual sickness, permanent invalidity, old age and maternity should be provided for: (i.) Under a national insurance fund in which provision is made for definite financial assistance to insured members which will relieve the economic stress occasioned by such circumstances; (ii.) under a national health scheme which will aim at adequate medical treatment for the people and which will provide the requisite machinery for the prevention of sickness and accident.

The Commissioners further recommended:—

That such a scheme be dissociated from the administration of the national insurance fund and that the functions and objects of the Health Department be extended in such manner as will enable provision to be made as early as possible for the effective supervision of adequate medical services, especially with respect to maternity benefit.

We can cordially agree with their opinion that the whole scheme of medical benefits for the assured with due provision for preventive medicine should be under a public health department.

In any scheme of health insurance we must stand for the principle of free choice of the medical attendant by the patient, such as now exists throughout the country; any scheme that will nationalize the profession or that will bring in undue red tape and machine-like methods, will do great harm in a community, where in health as in religious matters the personal element is deemed of great importance."

As regards Dr. McEachern's report, Dr. Wade, after welcoming him said:

"More attention is now being given both by Governments and the public to the necessity of reorganizing present methods of hospital finance and administration, and we welcome the visit of Dr. McEachern and his inquiry into our hospital system. We trust that as a result of his investigations there may be some satisfactory, comprehensive scheme initiated in New South Wales.

He has told us that the system in our sister State, Victoria, is, he considers, the best in the world, and he has laid special stress on the fact that it is controlled by an independent board, free from all political and other influences. May we hope that as an outcome of his representations we may have something similar introduced here with a system that will link up and co-ordinate all hospital activities, stop all overlap and see that in all cases of illness, no patient will be debarred by poor hospital facilities or long distances from receiving full access to all varieties of medical diagnosis and treatment.

Another suggestion made by Dr. McEachern is that all public hospitals should include in their system private and intermediate wards or annexes. His reasons for this are first, that the large hospitals will necessarily have the best equipped diagnostic departments, and therefore all patients will be able to have access to the best that can be procured; further that the private hospital is a legitimate way of earning revenue for the upkeep of the public hospital and that the intermediate hospital, though not in itself a paying venture, will, by its use of the special departments, such as the x-ray and the pathological, help to pay or pay the expenses of this department of the public hospital.

I feel that with us there is a need for intermediate hospitals, for it is true that that section of the community who is neither rich nor very poor, is not at present well catered for and yet it should be possible for these people like the very poor to have access to the best at reduced fees suitable to their finances.

Dr. McEachern has called attention to an interesting side issue connected with the presence of private wards in public hospitals; it is found that the eyes of the wealthy private patients are often opened by residence in them during treatment to the needs of the public hospital, with the result that large bequests are given by them to the public hospitals, often for some specific purpose, such as research work.

We trust that the advice given to our Governments in these three reports will in some measure be acted upon and that some systematic attempt to care for the health of the community may be initiated."

SOUTH AFRICA

The final stage in the organization of the medical profession in South Africa has now been reached, and is set forth in the following letter from the Honorary Secretary of the South African Committee to the Representative Body of the British Medical Association:

"I have pleasure in advising you that, resulting from the successful tour of Dr. Alfred Cox in South Africa, it has now been unanimously resolved to amalgamate the British Medical Association in this country and the South African Medical Association. At a meeting of the South African Committee of the British Medical Association held at Bloemfontein on the 27th ultimo there were present representatives of the South African Medical Association who had been invited to

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attend and to take part in the discussion on this subject. After full deliberation the following resolution was unanimously passed:—

'That the South African Committee requests the Council of the British Medical Association to permit the Association in South Africa to be known as 'The Medical Association of South Africa (British Medical Association)' with integral membership in the British Medical Association, and it has been agreed that the South African Medical Association will dissolve and recommend its branches to join the Medical Association of South Africa.'

"It is sincerely hoped that the Council will agree to the title requested in this resolution. The matter has been the subject of very mature deliberation by all branches of the British Medical Association in South Africa and the South African Medical Association."

The following recommendations were made by the Representative Body in regard to this letter:

Recommendation: That the Representative Body is gratified to learn that as a consequence of negotiations between the South African Committee, representing the branches of the British Medical Association in South Africa, and the South African Medical Association, an arrangement has been made whereby there will, in future, be only one organized body representing the profession in South Africa.

Recommendation: That the Representative Body agrees that the branches of the Association in the Union of South Africa and the Mandated Territory of South-West Africa shall in future be styled collectively "The Medical Association of South Africa (British Medical Association)."

Recommendation: That the Representative Body congratulates the leading members of the South African medical bodies on the statesmanship shown in coming to this arrangement; and wishes the Medical Association of South Africa (British Medical Association) every success in its efforts to make the organization of the profession in South Africa strong and effective.

EAST AFRICA

OUTBREAK OF SLEEPING SICKNESS AND ITS TREATMENT

The reports received by the Colonial Office on the recent outbreak of sleeping sickness in the Ufipa District of Tanganyika show that an area of 10,000 square miles was involved. Its population, however, is sparse, averaging only about one per square mile; 3,000 natives were removed to fly-free areas; approximately 300 cases of the sickness were found, and ninety deaths were ascribed to it. Treatment by "Bayer 205" and tryparsamide proved effective. Although the infection is widely spread, it has not attained epidemic proportions. The total number of deaths among natives recorded in 1925 was 161. No European died. A distinct branch of the medical department of the Government is being organized to deal with sleeping sickness.

GENERAL

We have received a notice from the Director of the Mellon Institute of Industrial Research, University of Pittsburgh, that the well-known firm of Johnson and Johnson of New Brunswick, N.J., has established a fellowship to study the exact requirements of surgeons with the aim of developing needed new supplies and standardizing products now in use. Dr. F. H. Slayton will be in charge of this research.

MEDICINE CONSUMED IN CANADA:—According to a report received by the U. S. Department of Commerce, medicinal and pharmaceutic preparations valued at $16,335,304 were consumed in Canada during the last year; the value per capita was $1.77, of which $1.37 was produced by manufacturers of Canada. There were 104 chemical plants in Canada manufacturing medicinal and pharmaceutic preparations in 1924 and the number increased in 1925 to 120. The centre of production is in Ontario, where there are sixty-six plants; Quebec has twenty-eight, and Manitoba, six.

The Rockefeller Institute for Medical Research was host on September 25 to a group of foreign delegates who attended the recent cancer symposium held by the American Society for the Control of Cancer at Lake Mohonk, N.Y. The party arrived at the institute at 11:30 a.m. and went first to the laboratories of Dr. Alexis Carrel for an inspection of his department and a demonstration of "The new method for the study of malignant tumours." Dr. Wade H. Brown gave a brief talk and demonstration on "Malignant disease in the rabbit." Following luncheon, Dr. James B. Murphy demonstrated in his laboratory some recent work on the experimental production and transmission of tar sarcoma in chickens. Among the group attending these demonstrations were the following: Drs. Henri Hartmann, Claude Regaud and Gustave Roussy, of Paris; Dr. Léon Bèrard, of Lyons; Dr. T. Marie, of Toulouse; Dr. Albert Reverdin, of Geneva; Dr. J. Maisin of Louvain; Dr. William DeVries, of Amsterdam; Dr. H. T. Deelman, of Gronington, and Professor Maud Slye, of Chicago.

The trustees and staff of the Mount Sinai Hospital, New York, have announced that Professor Friedrich von Müller will deliver the Edward G. Janeway Lectures on October 1 and 2, on "The nervous system and internal medicine."

According to *Science* among the announcements of gifts at the recent convocation of the University of Chicago was the sum of a million dollars given by Douglas Smith for medical research.

By the will of the late Sir John Williams, Bart., president of the University College and of the National Library of Wales, who died on May 24, the residue of the property, which will amount to nearly £100,000 is bequeathed to the two institutions of which he was president.

The University of Cambridge will commemorate on October 5 the tercentenary of the death of Francis Bacon. Dr. C. D. Board will give an address and there will be a reception and dinner at Trinity College. Honorary degrees will be conferred upon Sir Ernest Rutherford and Professor William Holdsworth.

In connection with the celebration of the fiftieth anniversary of the founding of the Johns Hopkins

University, a volume of the *Journal of Pharmacology and Experimental Therapeutics* will be issued in honour of Dr. John J. Abel, its founder, who has since 1891 been identified with the university. The volume contains forty articles filling about 550 pages. The contributors are all colleagues, friends or students of Dr. Abel, including among foreign men of science the late Arthur R. Cushny, David I. Macht, Hans H. Meyer, Carl Voegtlin, Archibald V. Hill, P. J. Hanzlik, E. M. K. Geiling and Paul D. Lamson.

The following are the newly elected officers of the American Society of Plant Physiologists: President, F. E. Lloyd, McGill University; Vice-President, Wright A. Gardner, Alabama Polytechnic Institute; Secretary-Treasurer, Scott V. Eaton, University of Chicago.

Professor von Eiselberg, of Vienna, who last June was awarded the Lister Medal of the Royal College of Surgeons, London, for distinguished contributions to surgical science, with an honorarium of $500, has undertaken to give an address at the Royal College of Surgeons on July 7, 1927.

At a recent meeting of the Royal College of Surgeons, London, under the presidency of Sir Berkeley Moynihan, Sir Anthony Bowlby, Sir D'Arcy Power and Mr. Sampson Handley were elected members of the executive committee of the Imperial Cancer Research Fund.

E. B. Verney, who has for the last four years held a Beit Memorial Fellowship, has been appointed professor of pharmacology in University College, London.

At a meeting last spring at the Institution of Civil Engineers it was resolved to found an Institution of Fuel Technology. The work of preparing a constitution was left to an organizing committee. Sir William Larke presided recently over a second meeting to receive the report of the work of the committee.

According to the report in the London *Times* the chairman read a letter from Sir Alfred Mond, who has accepted the office of president, in which, after expressing regret that he was unable to attend, he said: "The work which the institution has set out to do is of the utmost importance to industry, and indeed to the whole commonwealth. Under the conditions in which the country has been existing during the last few months public interest has become more and more concentrated on the problems which the institution has been formed to solve."

A model $250,000 health centre, opening in November, will be used in fighting sickness and death in New York City's congested East Side district, one of three localities in New York State, where the Milbank Memorial Fund is spending $2,000,000 to forward public health work. The building, a five-storey brick structure located in the Bellevue-Yorkville district at 325 East 38th Street, will house tuberculosis, social hygiene, dental, and infant welfare clinics, to be maintained by the New York City Department of Health.

"Under the leadership of their local health authorities," Mr. Kingsbury explained, "these communities seek to indicate the more vital problems confronting modern rural, urban and metropolitan communities in forwarding the general health of their populations, and to single out those phases of such problems which will more readily yield to control."

Important new public health activities recently inaugurated in Cattaraugus County include an intensive campaign for the prevention of diphtheria; work in the prevention and control of tuberculosis; the development of health education in the schools; the promotion of a social hygiene programme; the adoption by the County Health Department of a nutrition programme; and the maintenance of an open-air summer camp for children. Perhaps the outstanding recent development in the county was the assumption by the County Board of Supervisors of all of the expense of maintaining a generalized public health nursing service. The maintenance of a general nursing service in a rural county on such an extensive basis, marks a new departure in public health work.

Its appropriations during 1925 brought the total of the Millbank Fund's philanthropic grants since its establishment to $3,954,529.49. The Committee on Administrative Practice of the American Public Health Association, the National Committee for Mental Hygiene, and the State Charities Aid Association were among the agencies assisted. Grants were made for individual projects in health research at the Saranac Laboratory of the Edward L. Trudeau Foundation, and at the Bureau of Laboratories of the Department of Health of the City of New York.

The Millbank Fund was established on April 3, 1925, by Elizabeth Millbank Anderson in memory of her father and mother.

NOVA SCOTIA

In the recent federal elections, Doctors L. W. Johnstone, of Sydney Mines, and J. A. MacDonald, of St. Peter's, were returned to the Dominion Parliament by large majorities. Among those who voted for Dr. Johnstone was a lady who is upwards of a hundred years old.

Medical classes at Dalhousie University began the work of the new session on the fifteenth of September. The registration for the different years totals about a hundred and twenty-five. In addition there are several enrolled for advanced work in special subjects.

Dr. Boris Babkin, Professor of Physiology at Dalhousie University, is busily engaged in the revision of his book on the *External Secretion of the Digestive Glands*, of which a new edition, in German, is to be issued shortly. The publisher is J. Springer, Berlin.

The City Health Board, Halifax, has under consideration the erection of a new isolation hospital. The present structure is old and inconveniently situated. It is proposed that a new building be constructed on a portion of the City Home property, which would place the new hospital in close proximity to the laboratories of the Victoria General Hospital and the Provincial Department of Health.

A charge that a number of young girls were being wrongfully detained in the ward for insane women of the City Home, Halifax, led to the appointment of a commission to investigate the mental condition of these girls. The commission, composed of Doctors W. D. Forrest, W. Bruce Almon and W. H. Hattie and Professor N. J. Symons, reported that four of the girls were so subnormal that they required institutional care. Of the remainder, two might be expected to do well under suitable direction in private homes while two others could be given such care only at considerable risk. The commission also stated that

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the provisions at the City Home for the care of the feeble minded were quite inadequate, and deplored the absence of a suitable institution for such defectives in Nova Scotia. Much interest was taken in this investigation by the public, and it is expected that the provincial government will soon undertake the erection of an institution for the feeble minded. A further charge that the administration of the City Home is unsatisfactory is to be investigated by another commission.

Dr. Joseph Hayes, of Halifax, has been selected by the Nova Scotia Tuberculosis Commission to undertake organization work throughout the province.

Dr. A. I. Mader has disposed of his private hospital on Cobourg Road, Halifax, to the Halifax Infirmary. It is understood that the management of the Infirmary intend to use it solely as a maternity hospital.

The Halifax Branch of the Medical Society of Nova Scotia is to hold its first meeting for the session at the Ashburn Golf and Country Club on the thirteenth of October, when Dr. Philip Weatherbe will deliver his presidential address. A very interesting programme has been prepared for the winter, and an unusually successful session is anticipated.

Dr. John A. Ferrell, Director of the activities of The International Health Board in the United States, and Dr. J. G. Fitzgerald, Professor of Hygiene at the University of Toronto and the Canadian representative on the International Health Board, were recent visitors to Halifax. The purpose of their visit was to obtain a first hand acquaintance with the practices of the provincial department of health.

The Nova Scotia Division of the Canadian Red Cross Society has decided upon certain curtailment of its activities, and Dr. Smith L. Walker, who has served as Commissioner for several years, has severed his connection with the organization. During his term of office Dr. Walker has laboured assiduously in the endeavour to forward the public health programme of the Red Cross in a manner which would merit the support of the medical profession, and in this laudable effort has met with much success.

The death of Mrs. A. I. Mader, which occurred on the first of October, has deprived the city of Halifax of a lady who was noted for her many good works, several of her activities having brought her into intimate touch with members of the medical profession. For several years she was president of the Halifax Infants' Home, and during her term of office she effected many reforms in that institution and modernized it in many particulars. She took a very keen interest in antituberculous work from the time of its inception in Halifax, and only a few months ago she was appointed secretary to the recently organized Nova Scotia Tuberculosis Commission, in which office she showed conspicuous ability. Her sincerity and unselfishness, a singularly charming manner and a happy gift of expression, combined to win for her a very wide circle of friends. Her funeral, one of the largest ever seen in Halifax, was a striking demonstration of the esteem in which she was held. Besides her husband, a son, Victor, is a physician, while another son, Ivan, and a daughter, Eva, are each in the final year of the medical course.

The information that Dr. A. G. Nicholls has been prevailed upon to recall his resignation as Professor of Pathology at Dalhousie University and Pathologist to the Victoria General Hospital is very gratifying to the profession throughout Nova Scotia. An arrangement has been effected through which the laboratories of the Provincial Department of Health will hereafter be directed by Dr. D. J. MacKenzie, and Dr. Nicholls is left free to devote himself to the pathological work of the hospital and his teaching at the University. This entails the loss of Dr. MacKenzie to the University where, as Assistant Professor of Bacteriology, he has rendered notably good service.

We learn as we go to press that Dr. Nicholls' decision to resign is to be regarded as final.

W. H. HATTIE

NEW BRUNSWICK

During the first part of October, Dr. Peter Heinbecker visited Saint John. Dr. Heinbecker was previously an interne at the Saint John County Hospital and has just returned from the Arctic where he was one of the members of the American Museum Greenland expedition. Dr. Heinbecker's reports of the expedition were most interesting.

J. W. Fraser, architect, for the Jordan Memorial Sanitarium, has been authorized to call for tenders in connection with the remodelling and extension of the present buildings at River Glade. This work will cost in the vicinity of $100,000.00.

Dr. S. C. Murray of Albert has just returned from Truro, N.S., where he attended a family reunion. The doctor is one of the oldest practitioners in New Brunswick.

Dr. Alfonse Sormany of Shediac, had the misfortune to fracture his arm while cranking his car.

Dr. Sutherland who recently held an internship at the General Public Hospital, Saint John, was married to Miss Bonnell, who for some time had charge of the medical wards at the General Public Hospital. Dr. Sutherland has started practice at Annapolis Royal, Nova Scotia.

Dr. Leo Doirin of Shediac will sail from Quebec on October 20 with the purpose of taking postgraduate work at the University of Paris; he won a scholarship at the French Institute while a student at Laval University Medical School.

The September tour of the extra-mural course brought to New Brunswick as speakers, Dr. C. K. P. Henry of Montreal and Dr. Detweiler of Toronto. Dr. Henry spoke on the surgical treatment of perforated gastric and duodenal ulcers, providing a complete review of the work on this subject and quoting the results of a large series recently treated at the Montreal General Hospital. Dr. Detweiler covered most comprehensively a number of obscure chest conditions. The most interesting part of his talk concerned bronchitis, which was presented in a rather novel manner.

Dr. Gallie accompanied by Dr. E. Robertson from the Children's Hospital, Toronto, has addressed meetings at Newcastle, Moncton, Saint John, Fredericton and Woodstock.

Dr. Gallie's address covered the treatment of fractures at the elbow, wrist, ankle and knee and was listened to with much pleasure. Dr. Robertson spoke on pyloric stenosis in infants and on the treatment of burns by tannic acid. These gentlemen from Toronto provided one of the most interesting evenings we have enjoyed during this course of lectures.

A. STANLEY KIRKLAND

QUEBEC

More than 1,000 physicians speaking the French language attended the ninth annual convention of the Association des Medecins de Language Francaise which was held during the past month in this city. Delegates were present from France, Belgium and Luxembourg; and from South and Central America. The meeting was in every way a success. We hope to present our readers with abstracts of the more important papers.

The ninth annual meeting of the American Association for Thoracic Surgery was held here recently under the presidency of Dr. Edward Archibald of this city.

It has been officially announced that a grant of $100,000 has been made by the Provincial Government to the Women's General Hospital. The tender for the excavations has been accepted, and work will begin shortly on the new building.

In the presence of Archbishop Gauthier, administrator of the diocese of Montreal, and a distinguished gathering of medical men and friends of the institution, the French hospital, which bears the name of Hôpital Ste. Jeanne d'Arc, was formally opened recently. Previously this hospital was situated on St. Denis Street. The new hospital buildings comprise all those recently vacated by the Montreal Maternity with the addition of a new six-storey structure of the best modern design and construction.

The morbidity of contagious diseases and the infant mortality in Montreal both show distinct improvement over the statistics of last year according to the report issued by the City Health Department. The cases of contagious diseases reported number 6,644 against 8,382 up to the same date last year, a diminution of 1,738 or 20 per cent. In the death rate of infants under one year there has been this year a diminution of 10 per cent.

Hon. L. A. Taschereau, Premier of Quebec, after a tour of inspection, declared that he was perfectly satisfied with the new wing for the criminal insane at Bordeaux Jail. The institution will be one of the finest in Canada and equal to any of the insane hospitals for criminals in the United States. This new wing will come under the control of Hon. Athanase David, provincial secretary, and through his department with the other departments dealing with criminals. There are some 300 criminal insane in various hospitals throughout the province and these will be transferred to Bordeaux next December. Mr. Simard said, "The situation was a serious one, and had become so acute that additional guards had to be stationed at the several institutions to prevent violence or escape. The new wing marks the culmination of the scheme of the Hon. Athanase David, who started the movement several years ago."

A group of Montreal newspapermen were the guests of the Ste. Justine Hospital at luncheon after making a tour of inspection of the building. The purpose was to acquaint them with conditions at the hospital and the need for financial aid to furnish the five upper storeys of the new eight-storey building. A campaign for $250,000 has been arranged and will take place shortly. The hospital which is devoted entirely to ailing children has at present 164 beds. This is now found to be inadequate in view of the steady increase of patients.

The many friends of Prof. J. C. Meakins will learn with deep regret of the sudden death of his wife which took place on the evening of October the 12th. A severe heart attack terminated fatally after a very brief illness. All who saw her so full of life and helpfulness at the various functions of the McGill Re-union, will find it difficult to realize the sudden passing of a spirit so full of charm, and of the joy of life, and so ready to aid in everything that made for the success of the University, and will sympathize deeply with the family in their bereavement.

Dr. F. G. Finley, of Montreal, was one of the four to receive the honorary degree of LL.D. at McGill University during the Re-union week.

Dr. A. K. Haywood of Montreal, has been appointed trustee of the American Hospital Association which is holding its annual convention at Atlantic City.

The Royal Edward Institute has perfected plans for selling Christmas seals to aid anti-tuberculosis work in the City of Montreal. New nurses have been added to the staff of district visitors so that additional money must be provided to meet the increased expenses.

The following is a list of the newly elected officers of the College of Physicians and Surgeons of the Province of Quebec: Dr. L. F. Dubé, Notre-Dame du Lac; Dr. J. E. Bélanger, Lévis; Dr. W. A. Thibault, Danville; Dr. A. J. Boisvert, Plessisville; Dr. C. B. Biron, Nicolet; Dr. P. A. Robichaud, Montreal; Dr. W. W. Lynch, Sherbrooke; Dr. Alexis Bouthillier, St. Jean; Dr. Henri Dorval, Montreal; Dr. Ed. Kennedy, Montreal; Dr. Emile Desrochers, Montreal; Dr. Oct. Létourneau, Montreal; Dr. Raoul Chevrier, Hull; Dr. J. P. Laporte, Joliette; Dr. C. N. Deblois, Trois-Rivières; Dr. P. C. Dagneau, Quebec; Dr. Gustave Beaudet, Charlesbourg; Dr. Eugène Tremblay, Chicoutimi.

There are thirteen new members amongst this number.

ONTARIO

Annual Meeting of District Number Nine.—The annual meeting of District No. 9 of the Ontario Medical Association was held on August 4th, at Gravenhurst, under the auspices of the Muskoka Medical Society. The morning session, held in the Calydor Sanatorium, was opened with an address of welcome by Dr. C. D.

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Parfitt, President of the Muskoka Medical Society, followed by an address by Dr. W. J. Cook, Counsellor of the District. The following programme was then proceeded with: "Infective arthritis of venereal origin," Dr. J. D. MacDonald, Huntsville. "Pyelitis," Dr. M. M. Fisher, Gravenhurst. "The development of medical illustration," Mr. Max Broedel, Johns Hopkins Hospital. "Treatment of severe burns," Dr. Malcolm H. V. Cameron. General discussion followed each paper.

At the conclusion of the morning session, luncheon was served in the Sanatorium and was followed by an inspection of the buildings, after which the following demonstrations and addresses were given in the Medical Library of the Muskoka Hospital for Consumptives: "Artificial pneumothorax with fluoroscope," Dr. H. C. P. Hazlewood. "Estimation of basal metabolism, and estimation of vital capacity," by Dr. J. G. Day; "Lamps used in heliotherapy," Dr. C. B. Ross.

Dr. Edgar Brandon, President of the Ontario Medical Association gave an address on the work of the Association, and was followed by a talk on "The cancer problem" by Dr. T. Cullen of Johns Hopkins Hospital. Dr. W. B. Kendall spoke on "Sanatorium chest clinics" after which Dr. C. B. Ross read a paper on "Some non-tuberculous cases of pleurisy with effusion and hæmoptysis."

Dinner was served at the Muskoka Cottage Sanatorium, after which Dr. T. C. Routley, Secretary of the Ontario Association spoke on Association matters. This was followed by a paper on "Toxic goitre," by Dr. N. S. Shenstone of Toronto and a symposium on the "Surgical treatment of pulmonary tuberculosis," by Drs. H. C. Hazlewood, H. W. Hetherington and D. W. Crombie of Gravenhurst.

The visiting ladies were well looked after by the Ladies' Reception Committee, and enjoyed a motor trip to South Falls and Hoc Roc; an afternoon tea followed by an inspection of Calydor Sanatorium and ending with a delightful launch trip on Muskoka Lake in the evening. The meeting was well attended and thoroughly enjoyed by all present.

Annual meeting of District Number Two.—The annual meeting of District No. 2 of the Ontario Medical Association was held on September 1st, in the Hotel Sunset, Goderich, under the auspices of the Huron County Medical Society. Fifty-seven medical men registered as present, about half of them being accompanied by their ladies. The morning was devoted to registration; golfing, bowling, tennis, bathing and boating were enjoyed by those who arrived early. The meeting opened for business at 2:00 p.m. and, after a few words of welcome by Dr. Taylor of Goderich, President of the Huron County Medical Society, Dr. Ward Woolner of Ayr, district counsellor, who was in the chair, addressed the gathering on "The status of the profession in the district." He was followed by Dr. Stuart Pritchard of Battle Creek Sanitorium, who gave an interesting address on "The differential diagnosis of pulmonary affections," illustrated by lantern slides. In the absence of Dr. Brandon of North Bay, President of the Ontario Medical Association, who was detained by an accident to his train en route, Dr. Weston Krupp of Woodstock, Vice-President of the Association, addressed the gathering on the work of the Association, and the advantages of membership in it. Dr. T. C. Routley, its Secretary spoke of the conditions in the various provinces affecting the profession, and the legislation obtained and being sought for, pointing out that the Province of Ontario had the most advanced legislation to be found anywhere in the world.

Dr. Lorne Robertson of Stratford, in an instructive paper on "Surgical irregularities," brought out many anomalies he had met with in active practice. Dr. Krupp also added to this subject by mentioning some peculiarities he had met. At five o'clock, afternoon tea was served to the members and their ladies by the Ladies' Hospital Auxiliary. At seven o'clock a dinner was tendered the visiting medical men at the Hotel Sunset by the Huron County Medical Society. Dr. W. F. Gallow of Goderich, an ex-mayor, in the absence of the Mayor, welcomed the visitors and also read a letter and telegram from His Honour Judge Barron of Stratford, (who was to address the meeting) regretting his inability to be present on account of illness.

After dinner, the members adjourned to the sitting room where Dr. Geo. Ramsay of London gave an address on "The non-surgical treatment of fractures," illustrated by lantern slides; and Dr. Fisher of Stratford gave a talk on the use of the sphygmograph in practice. The Secretary was instructed to convey to His Honour Judge Barron, the sympathy of those present and their hope for his speedy recovery.

At the business session of the meeting, Dr. Ward Woolner of Ayr was again nominated as District Counsellor. A motion was passed to elect three vice-counsellors in view of the probability of a division of the district, and the following were elected: Dr. W. A. McIntosh of Simcoe; Dr. A. J. McGanity, of Kitchener; Dr. W. F. Gallow of Goderich.

On the invitation of the Brant County Medical Society, it was decided to hold the next meeting of the District in the city of Brantford, as guests of that Society. The meeting then adjourned.

W. F. GALLOW
Secretary Huron County Medical Association

Annual Meeting District Number Ten.—District Number Ten, comprising Thunder Bay, Rainy River, Kenora and Patricia, of the Ontario Medical Association held their annual meeting in Fort William and Port Arthur on Monday, September 6, 1926. There was a full attendance of the physicians not only of the two cities but also from Schreiber, Rainy River and Sioux Lookout. In addition to the speakers furnished by the Provincial Association the district was favoured with a visit from Sir Henry Gauvain, who is touring Canada discussing the benefits to be derived from heliotherapy in surgical tuberculosis. With Sir Henry was Dr. R. E. Wodehouse of Ottawa, Secretary of the Canadian Association for the Prevention of Tuberculosis.

Sir Henry Gauvain was the first to address the meeting and spoke on the value of heliotherapy when used in connection with recognized conservative surgical measures. He showed several motion picture films of his sanatorium, with the children at work and play, and taking the cure; and also showed the convalescent annex at the sea shore in which, in addition to the sun treatment, they received the advantages of sea bathing. This meeting was held in the Royal Theatre, the officials of which kindly permitted the use of the theatre for the meeting and showing of the films.

The guests were entertained at luncheon after which professor Geo. C. Hale of the University of Western Ontario, London, read an interesting paper on "Nephritis from the standpoint of the general practitioner."

Later in the afternoon Sir Henry Gauvain gave a clinic on cases of joint tuberculosis. Following this he showed many slides illustrating the appliances used to correct deformity, and the results obtained by treatment.

In the evening, following an informal dinner, Dr. Edgar Brandon of North Bay, presented the annual message of the President of the Ontario Association. He referred to many of the problems that were being considered and of the gains being made. He referred particularly to the fact that many doctors failed to

become members of the Provincial Association but he reiterated the statement that District Number Ten had the largest percentage of men linked up in the Ontario Association, and that for several years the Thunder Bay Medical Association had been the banner Association, registering almost 100 per cent as members year after year.

Following Dr. Brandon, Dr. T. C. Routley, the general secretary, gave a résumé of several matters which had been under consideration. Dr. R. E. Wodehouse spoke on the work of the Canadian Tuberculosis Society, and Dr. Doolittle, of good road fame, who was at the head of the lakes for the day and who had been in constant attendance, related several anecdotes from his forty years in the profession and said that in a few more years the all red route would be available for auto traffic, a fact which means a lot to this part of Canada.

At a meeting of the Barrie Medical Society held at Barrie July 20th, Dr. J. W. Crane of Western University Medical School, gave an address on "Diet and disease."

The Middlesex County Medical Society met at Strathroy on July 21st. The following papers were given: "Modern intravenous therapy, including blood transfusion, with demonstration of technique," Dr. G. W. Ross, Toronto. "The eczemas of infancy and childhood," Dr. Geo. Smith, Toronto.

At a meeting of the Thunder Bay Medical Society held at Port Arthur on July 26th, Dr. W. P. Tew of London gave an address on "The Toxæmias of pregnancy."

Dr. A. J. Grant of London visited the North Bay Medical Society on July 30th, giving a talk on "Empyema of the thorax" illustrated by means of lantern slides.

The Thunder Bay Medical Society met in Port Arthur on August 9th, Dr. H. E. Paul of Toronto gave an address on "Pyelography".

On August 11th, Dr. R. R. MacGregor of Kingston addressed the Hastings County Medical Society at Marmora, his subject being "Cholera infantum."

The Northumberland and Durham Medical Society met at Cobourg on August 18th. The following addresses were given: Neurological surgery," Dr. Kenneth McKenzie, Toronto. "The physiology and pathology of digestion in infants and its relationship to practical infant feeding," Dr. A. P. Hart, Toronto.

Sir Henry Gauvain addressed Niagara District Medical Association on September 2nd, 1926, at St. Catharines. Lantern slides on tubercular cases, largely joint cases, were shown to a large and interested audience.

The Harvey Club of London met on Saturday evening the 25th of September and were addressed by Dr. T. B. McGhie on the subject of "Juvenile courts."

The Fellows of the Academy of Medicine, Toronto, had the pleasure of being addressed by Sir Henry Gauvain, Medical Director of the Lord Mayor Treloar Hospital for Crippled Children, Alton Park and Hayling Island, England, on Friday, September 3rd. The meeting was held under the auspices of the Canadian Tuberculosis Association and the Canadian Medical Association. Sir Henry's subject was "Heliotherapy and orthopædic surgery" and he described very fully the methods of treatment of surgical tuberculosis carried out at the hospitals with which he is connected.

On September 15th, the second annual Golf Field Day of the Academy of Medicine, Toronto, was held at Lakeview Golf Club, followed by a dinner at which 105 guests were present. During the summer just closed, a series of golf matches were held for the Academy of Medicine Golf Challenge Cup donated by Dr. F. N. G. Starr. In the unavoidable absence of Dr. Starr, the beautiful cup was presented by Sir William Mulock. Dr. J. X. Robert, the winner, was presented with a replica of the cup by the President, Dr. A. J. Mackenzie, Dr. H. A. Bruce giving a silver cigarette case to the runner-up, Dr. C. F. Riley. The winners of the Field Day prizes were Drs. J. X. Robert, John Hepburn, C. S. Hawkins, W. A. Carswell, E. A. Broughton and G. E. Smith. In spite of the poor weather, the event was a marked success.

The annual dinner of the Academy of Medicine, Toronto, was held on Tuesday, October 5th, and was followed by the Stated Meeting at 8.30 p.m. at which the President, Dr. A. J. Mackenzie delivered his inaugural address.

An interesting feature of the evening was the presentation by the Fellows of the Academy to the President of a handsome silver fruit bowl of old Georgian design. The presentation was made by the immediate Past President, Dr. F. A. Cleland, who spoke of the high esteem in which the President was held, and offered the congratulations of the Academy on his recent marriage.

Following the presidential address, there was an open discussion regarding the future policy of the Academy.

On October 22nd, the Academy of Medicine, Toronto, was addressed by Mr. W. Sampson Handley of London, England, and Mr. D. P. D. Wilkie, of Edinburgh, Scotland.

On November 2nd, at the Stated Meeting of the Academy of Medicine, Toronto, Sir Ewen Maclean, President Elect of the British Medical Association, Cardiff, Wales, addressed the Fellows on "Some observations on puerperal infections."

The third annual St. Luke's Day Service of the Academy of Medicine, Toronto, was held in Osler Hall on Sunday, October 17th, at 4 p.m. Reverend Father Burke of St. Peter's Church preached the sermon.

At a meeting of the Hamilton Medical Society held on September 8th, Dr. A. H. W. Caulfeild gave an address on "Asthma and hay fever."

The Hastings County Medical Society met at Stirling on September 8th; Dr. W. P. Tew of London gave an address on "The management of certain obstetrical emergencies."

On September 15th, Dr. C. B. Parker of Toronto addressed a meeting of the Northumberland and Durham Medical Societies at Port Hope on the subject of "Intestinal obstruction."

On August 25th, Dr. M. H. V. Cameron visited the Thunder Bay Medical Society at Fort William and

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Port Arthur. In addition to holding general clinics, he gave addresses on "Emergency surgery of the gall bladder" and "Tannic acid treatment of severe burns."

At a meeting of the Peterborough Medical Society held on September 23rd, Dr. F. W. Hughes of the Western Ontario Medical School gave an address on "Recent advances in infectious diseases."

The Renfrew County Medical Society met at Douglas on September 23rd; Dr. E. J. Trow of Toronto gave an address, illustrated by lantern slides, on "Common skin affections, their diagnosis and treatment."

The North Bay Medical Society met on September 29th; Dr. J. C. McClelland of Toronto gave an address on "The significance of pyuria." Dr. McClelland also gave a clinic to demonstrate cystoscopy.

On September 30th, the Sudbury Medical Society was addressed, at their regular meeting, by Dr. H. A. Dixon of Toronto, his subject being "The diagnosis and treatment of the common skin affections," with lantern slide illustrations.

The first monthly meeting of the Wellesley Hospital Clinical Society was held on Thursday, October 14th. during the noon hour. The programme was as follows: Dr. H. A. Bruce: "Three cases of acute hepatitis." Dr. G. W. Ross: "One, possibly two, interesting cases." Dr. F. Hipwell: "A case of diabetes showing ability to discontinue insulin."

At the close of the 1925-26 season, the North Waterloo Medical Society held their annual dinner and election of officers at the Grand River Country Club. The speaker of the evening was Mr. A. J. Cundick of the Bank of Nova Scotia, who gave an address on banking.

The District Counsellor, Dr. Ward Woolner of Ayr, advised the society that the district was about to be divided as it had become rather unwieldy. The annual election of officers resulted as follows: President, Dr. J. M. Livingston, of Waterloo; Vice-President, Dr. R. L. Shields, of Kitchener; Secretary, Dr. F. F. Zwick, of Waterloo; Treasurer, Dr. R. G. Ratz, of Kitchener.

The officers of the Ontario College of Physicians and Surgeons for the ensuing year will be: President, W. T. L. Addison, Toronto; Vice-President, Dr. T. W. H. Young, Peterboro; Registrar, Dr. H. Wilberforce Aikins, Toronto.

The Western Ontario Academy of Medicine and the alumni of the Western Medical School staged an elaborate clinical demonstration during the London Centennial week in August. The following programme was carried out:

VICTORIA HOSPITAL—STAFF CONFERENCE

(Programme by Alumni Association, Dr. George McNeill, Chairman of Staff, presiding)

9.00 a.m., Operative clinic, eye, ear, nose and throat, Dr. Septimus Thompson.

10.00 a.m., Demonstration of modern laboratory methods, Dr. E. M. Watson.

10.30-12.30, Presentation of clinical cases: Surgery, Dr. Hadley Williams and Dr. J. Cameron Wilson; Medicine, Dr. F. J. H. Campbell and Dr. J. T. Bowman; Pædiatrics, Dr. W. L. Denney and Dr. Harold S. Little; Gynæcology and Obstetrics, Dr. F. R. Clegg and Dr. W. P. Tew.

Luncheon, Drive to Sanatorium.

2.30 p.m., Queen Alexandra Sanatorium, Byron. Arrangements by courtesy of Dr. F. H. Pratten and staff; programme by consultant staff, auspices of Academy of Medicine, Dr. J. I. Ferguson, president; (1) Acute perforation of the stomach and duodenum, a series of twenty-five cases, Dr. Hadley Williams; (2) Functional and organic diseases of the heart, differential diagnosis, Dr. George C. Hale; (3) Pregnancy and tuberculosis, Dr. Ernest L. Williams; (4) The importance of the recognition and correction of pathology in the upper respiratory tract in chest disabilities, Dr. William J. Brown; (5) Early diagnosis and principles of treatment in bone tuberculosis, Dr. George Ramsay.

MANITOBA

The Inaugural Address at the opening of the Medical College on Oct. 4 was given by Dr. Alexander Gibson, Honorary President of the Manitoba Medical Students' Association. Mr. N. B. Perrin, President of the Students' Association also spoke.

Dr. G. F. Stephens, Superintendent of the Winnipeg General Hospital has returned from attending the annual meeting of the American Hospital Association at Atlantic City.

At the meeting of the Winnipeg Medical Society on Oct. 15th an interesting discussion took place on the relation of the medical profession to the hospital. The chief speakers were Dr. Jas. McKenty, Dr. W. Harvey Smith, Dr. Geo. Stephens and Dr. H. W. Wadge.

At the recent annual meeting of the Manitoba Medical Association the following officers were elected: President, Dr. J. D. McQueen, Winnipeg; first vice-president, Dr. J. R. Martin, Neepawa; second vice-president, Dr. R. R. Swan, Winnipeg; honorary secretary, Dr. J. D. Adamson, Winnipeg; honorary treasurer, Dr. W. L. Mann, Winnipeg. Drs. E. H. Alexander and A. P. MacKinnon of Winnipeg and Dr. Harry Lewis of Angusville were added to the executive. Dr. McQueen and Dr. Wadge were appointed a committee to make plans for popular medical talks by radio. These will be given in co-operation with the Manitoba Dental Association; the first will be given shortly.

Dr. L. D. Collin of St. Boniface gave an address on "Acidosis" at the recent convention in Manitoba of French speaking physicians of North America.

Drs. Jas. McKenty, J. E. Lehmann and W. A. Gardner attended the recent meeting of the American College of Surgeons in Montreal.

Dr. D. A. Stewart has been elected Vice-President of the National Tuberculosis Association at Washington, D.C.

A photograph of Sir Wm. Osler, donated by Lady Osler has been placed in the Students room of the Manitoba Medical College.

SASKATCHEWAN

The regular monthly meeting which was also the annual meeting of the Regina and District Medical Society was held October 6th, following a wild fowl dinner in the Parliament Building Restaurant; forty-two members were present. Dr. Beattie Martin gave an interesting address on "Tendon transplantation," illustrated by clinical cases.

The following officers were elected for the ensuing year: President, Dr. D. C. Hart, Regina; first Vice-President, Dr. F. W. Hart, Indian Head; second Vice-President, Dr. H. H. Mitchell, Regina; Secretary, Dr. R. McAlister; Treasurer, Dr. S. Moore; Executive, Drs. Ellis, Chase, Jackes, Martin and Carmichael.

Dr. J. C. Currie has returned to Regina and will practise in that city.

Dr. Hall of Fort Qu'Appelle is spending a few weeks in Ontario.

The Hon. Dr. King, Minister of Soldiers Civil Re-Establishment and Public Health, spent a day in Regina, and met the medical fraternity at a luncheon in the General Hospital.

Several of our members are enjoying the shooting season and report excellent sport.

A money by-law for an expenditure of $200,000 for the much needed extension to the Regina General Hospital is being submitted to the rate payers at the next civic election.

Dr. A. E. Hotham who has been practising for a number of years at Strassbourg, is now a physician on the staff of the Mental Hospital at Battleford.

Dr. G. F. Cliff of Mortlach, has opened an office at Kingston, Ont.

Dr. D. M. Baltzan of Saskatoon is now engaged in post-graduate study in London and Edinburgh.

Dr. G. Medley Hazen, a graduate of Toronto University, who has been practising at Saskatoon, has opened an office at Rosetown.

Dr. Ivan E. Brouse, a graduate of McGill, is practising at Vibank.

Dr. Crawford Rose, has opened an office at Speers. Dr. Rose graduated from Manitoba this year.

Dr. Louis Schulman, a graduate of Manitoba, 1926, is now practising in Saskatoon.

Dr. George E. Dragan, a graduate of McGill, has opened an office in Saskatoon.

R. McALISTER

ALBERTA

Dr. Ralph E. Johnstone, formerly of Sangudo, is now practising in Edson, Alberta.

Dr. E. V. Kershaw, who recently graduated from the University of Alberta, has settled in Youngstown.

Dr. W. F. Carscallen of Bowden, has returned from the east, where he spent two months in post-graduate work.

Dr. W. H. McGuffin of Calgary, has returned from Denver, Colo., where he spent several weeks in special radiographic study of diseases of the chest.

Dr. P. A. Holmes, who has been practising at Granum has gone east.

Dr. Hector MacKenzie has removed from Provost to Milo, Alberta.

Dr. Laurence G. Alexander, formerly of Saskatoon, is now in practice at Arrowwood, Alberta.

Dr. G. A. Ings, of Fort McMurray, recently visited Calgary, where he practised for many years.

Dr. C. G. Reinhorn has returned to Edmonton after an absence of two years spent in post-graduate work in Europe.

Representation will probably be made to the Provincial Government to make the necessary amendments to the law, so that drug addicts may be interdicted. If this is accomplished and a list of the addicts is placed in the hands of physicians, it is believed that better control will be maintained. At the present time addicts may be sent to the Mental Hospital at Ponoka, on the evidence given by two physicians. Such patients after dismissal from the hospital often resume their former habits, seek out other physicians, and once more become a nuisance.

Dr. G. H. Woodland, who has been in practice in Medicine Hat for over twenty years, has retired from practice and has moved to Boston, Mass. Dr. H. C. Dixon has purchased his home and office.

Dr. F. W. Gershaw, of Medicine Hat, is to be congratulated on his re-election to the House of Commons.

Dr. A. McNally, of Lethbridge, has returned from a three months' trip to England and France, spent partly for pleasure and partly for post-graduate work. He had the pleasure of re-visiting the scenes of some of his war work. He reports a very pleasant and profitable time.

Dr. G. W. Leech has removed from Lethbridge to Carmangay, and opened an office there.

Dr. D. Woodcock has returned from a motor trip to Ontario and the States, during which he attended the convention of Eye, Ear, Nose and Throat Specialists, in Denver, for two weeks, seeing very interesting and instructive work.

The Lethbridge men greatly enjoyed the visit of the travelling clinic in July and are eagerly awaiting a repetition of the same.

Dr. J. S. McEachern of Calgary is attending the Inter-State Post-Graduate Assembly of North America

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meeting at Cleveland, and the American College of Surgeons Clinical Congress in Montreal.

The first meeting of the 1926-27 session of the Calgary Medical Society was held on October 5th, when Dr. George Learmonth addressed the members on the subject of "John Hunter, eighteenth century naturalist, anatomist and surgeon." G. LEARMONTH

BRITISH COLUMBIA

The Summer School of the Vancouver Medical Association was held during the second week of September, and was very well attended. Dr. Warthin, of Ann Arbor, gave some very interesting addresses on his recent work in connection with renal disease and syphilis of the heart and aorta. He also discussed Dr. George Gellhorn's excellent paper on "Syphilis in gynæcology and obstetrics." Sir Henry Gauvain, who came to Canada for the Child Welfare Congress, gave two lectures to the Summer School on surgical tuberculosis in children and its treatment by heliotherapy. He emphasized the importance of using heliotherapy not as the only means of treatment but as a valuable adjuvant to other and more direct forms of therapy. Dr. Carl Hedblom, now of Chicago, but recently of the Mayo Clinic gave an interesting paper with statistics on "End results in breast carcinoma" and also spoke on the "Differential diagnosis of acute abdominal conditions." Other speakers at the school were Dr. Fraser Gurd, of Montreal; Dr. George Hale of Western University; and Dr. R. R. MacGregor of Queen's University who came to Vancouver by courtesy of the Canadian Medical Association under its scheme for post-graduate education.

Dr. Norman M. Keith, of the Mayo Clinic, was a recent visitor in Vancouver, the guest of his brother Dr. W. D. Keith. While in the city Dr. Norman Keith was the guest of honour at a dinner of the Vancouver Medical Association held at the Shaughnessy Golf Club. After the dinner Dr. Keith gave a very interesting address on cardio vascular renal diseases in which he emphasized the value and the good results obtained from the methods of treatment now in use at Rochester.

The profession of Victoria and District held three meetings during the visit of Dr. D. S. MacKay, Professor of Gynæcology, Dr. B. J. Brandson, Professor of Surgery and Dr. D. Nicholson, associate Professor of Pathology, all of the University of Manitoba. These three gentlemen are touring British Columbia under the auspices of the Canadian Medical Association, lecturing in connection with its scheme of extra-mural post-graduate education. Thirty-two members of the Victoria profession and three members from points on Vancouver Island were present at a banquet tendered the visitors on Saturday, October 2nd. Dr. MacKay presented the subject of "Pelvic congestion" in a novel and most instructive manner. Dr. Nicholson dealt with the newer laboratory tests and showed in a very simple way how the Schick and Dick tests and immunization may be used in general practice. Again thirty-four Victoria members attended a luncheon on Monday when Dr. MacKay gave a very practical talk on the subject of "Abortion". On Monday evening a largely attended meeting at the Jubilee Hospital enjoyed the closing lectures when Dr. Brandson gave an instructive talk on "Management of appendicitis in its late acute stage," and Dr. Nicholson on "Laboratory Methods."

At time of going to press the extra-mural post-graduate tour is well on the way, and reports received indicate that highly successful meetings, with practically 100 per cent attendances, have been held at Cranbrook, Nelson, Kamloops, Victoria and Nanaimo. A full report of the tour will be given in the next issue of the *Journal*.

The August meeting of the Victoria Medical Society was addressed by Dr. Georgine Luden of the Mayo Clinic Cancer Research. She spoke of the recent work in "Cancer research," and in an interesting paper described the effects of carbon monoxide poisoning, and its symptoms in chronic poisoning developing in private houses and other places where gas leakage is responsible for the presence of this gas.

Dr. W. M. Carr, Radiologist of the Jubilee Hospital, Victoria, has been on extended vacation visiting old friends in Winnipeg and other eastern points.

Jasper Park has become very famous as a mountain holiday resort and Drs. Thomas McPherson, Gordon Kenning, George Hall, W. T. Barrett, M. J. Keys and Stuart Kenning report favourably on the excellent golf course maintained at Jasper.

Dr. J. A. Street, of Port Alice, has been taking a three weeks leave of absence.

Dr. H. C. Wrinch of Hazelton has returned home after an absence of about three months.

It is with regret we hear that Dr. J. E. Affleck, of Penticton, is sick. His many friends wish him a speedy recovery.

Dr. J. H. MacDermot, President of the B.C. Medical Association, who has been ill since early July, is now improving slowly, and it is hoped will soon be able to leave the hospital.

A luncheon meeting of the B.C. Medical Association was held on September 15th, when Dr. T. C. Routley, General Secretary of the Canadian Medical Association gave an address on the work of the Canadian Medical Association and the value of efficient medical organization. There was an excellent attendance.

Dr. and Mrs. E. Murray Blair are receiving congratulations on the birth of a son on September 26th.

Dr. H. A. Spohn, of Vancouver, has been elected President of the Canadian Society for the Study of Diseases of Children.

Dr. W. H. McIntyre formerly of Nanaimo is now practising in Victoria.

Book Reviews

The Human Cerebrospinal Fluid. Editorial Board: Charles Dana, M.D., Thomas K. Davis, M.D., etc. 568 pages with 77 illustrations and 58 tables. Price $10.00. Paul B. Hoeber, 67-69 East 59th Street, New York, 1926.

This volume represents the fourth of a series of monographs published by the Association for Research in Nervous and Mental Disease, the other three being devoted to *Acute Epidemic Encephalitis*, *Multiple Sclerosis* and *Heredity in Nervous and Mental Disease*. Its predecessors are excellent and unique summaries of their respective topics and the present volume is quite up to the high standard already set.

Some thirty-nine contributors have supplied the material for this book and the result is a splendid symposium on the cerebrospinal fluid, bringing together in convenient and accessible form, the latest results of research and clinical investigation. Much of the information presented is the result of work done since the publication of the excellent monographs on the same subject by Levinson and Boyd.

It would be difficult to think of an aspect of the study of the cerebrospinal fluid that is not dealt with. There are seven sections, each devoted to the practical discussion of some separate portion of the work. The first section has wisely been given over to the consideration of the normal cerebrospinal fluid, thus giving the reader the correct orientation to start with. In this way also the book's value as a reference work is considerably enhanced. There is a short historical résumé of our knowledge of the fluid, a good chapter on its origin, circulation and destination and a very complete review of the literature bearing upon the various physical and chemical characters of the fluid. This section as with the others is finished off with a bibliography; this particular one covering sixteen pages.

Section two, devoted to biological, chemical and physical properties under normal and pathological conditions contains much interesting material. Changes in the immunological properties, protein, sugar and chloride content are fully dealt with, and the conclusions reached supported by many tables of examination results. Variations in fluids obtained from different sites are described and the section ends with an interesting chapter on the electric conductivity of the fluid. Dr. Eckel, who is responsible for this chapter, concludes that since changes in conductivity depend on alterations in the chemical constituents of the fluid, the measurement of these is an easier and more practical method of getting information than is the estimation of electrical resistance. A short discussion of the three colloidal reactions leaves this subject *in statu quo ante*.

Valuable studies on the pressure of the fluid make up the following section. The need for manometric measurement of pressure is stressed; the possibilities of combined lumbar and ventricular puncture in the diagnosis of brain tumour are based upon the results in twenty-one clinical cases, manometric observations in spinal cord tumour cases are recorded. This section also contains the record of some interesting work both experimental and clinical in the reduction of cerebrospinal fluid pressure by the administration of hypertonic solutions. In the experimental work, out of a great variety of substances used intravenously, sodium chloride was found to be most effectual but toxic unless administered carefully. Dextrose was found to be both non-toxic and effectual in amounts up to 50 c.c. of a 100 per cent solution. One feels justified in believing that the possibilities in the clinical use of hypertonic solutions have just been touched.

The uses and value of ventriculography, lipiodol injections into the spinal canal and radiography following air displacement by the spinal puncture method, are fully discussed and conservative conclusions drawn.

Section 5, devoted to changes found in the fluid in diseases of the central nervous system is the large and important section of the book. It not only contains thoroughly up to date data on fluid changes in the conditions that immediately come to mind, *viz.*, the commoner meningeal conditions. There are in addition good summaries of the changes noted in the diseases of childhood, the infectious diseases, degenerative diseases, syphilis and brain-tumour.

The section on fluid changes in general extra-neural diseases does not contain much that is new, but it is decidedly convenient to have the literature and observations brought together.

The final section of the book devoted to the treatment of pathological onditions through the cerebrospinal fluid is as one would expect, devoted chiefly to the treatment of meningitis and neurosyphilis and is, on the whole, a reliable and trustworthy survey.

While the book contains little in the way of absolutely new material, all those whose work has anything to do with the cerebrospinal fluid—neurologists, psychiatrists, pathologists, pædiatricians, internists and surgeons should and will be grateful for this carefully prepared, well arranged compilation of up-to-date knowledge.

This volume, unlike its predecessors, is blessed with an index, and a good one.

The physical attributes of the book are excellent; good paper, clear type with no errors that the present reviewers noted, clear illustrations and good binding. It is likely that the book would have been just as valuable without some of the very lengthy tables of findings, but after all this is a small matter in a book otherwise so uniformly good.

A. T. MATHERS

Practical Dietetics for Adults and Children in Health and Disease. By Sanford Blum, A.B., M.S., M.D., San Francisco. Second revised edition, 343 pages. $4.50. F. A. Davis Co., Philadelphia, 1926.

As an introduction to this study Dr. Blum points out that a dietary should possess other virtues than that of being correct from a medical standpoint. The patient's occupation and social status are important considerations. It should be of such a nature that he can and will follow it. It should allow such variety and freedom of choice as will eliminate the continual temptation of transgressing its limits.

Throughout the book these factors are given careful consideration. Under each disease-heading the dietaries are classified according to the age, sex, and social position of the patient. For instance, the directions to the society matron are widely different from those to the working girl, or to the young mother. Dr. Blum has succeeded in meeting these differences by printing in detail separate type diets which can be carried out with the greatest facility by each class. General instructions as to hours, exercise, and mode of living, are included.

The author deserves commendation for ignoring such precise details as weighed amounts of food, and their expression in terms of calories. However interesting this phase of dietetics may be, and however useful from an experimental point of view,

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it is quite impractical outside the well equipped metabolic laboratory, and unsuitable for the average practitioner.

A close study of the diets, however, leaves one with the impression that the author has exercised greater care in adapting the diets to the patient, than to the disease from which he may be suffering. The only diet prescribed for typhoid fever is of the now obsolete starvation type, while no place is alloted to the universally recognized Sippy and Lenhartz regimes for peptic ulcer.

The book, though hardly suitable for the research student or specialist, is recommended to the general practitioner. E. S. MILLS

Mesenteric Vascular Occlusion. Supplemented by an appendix of 76 original cases. A. J. Cokkinis, M.B., B.S. Lond., F.R.C.S. Eng. Surgical Registrar, London Lock Hospital. 159 pages. Price 10/6. Bailliere, Tindall and Cox, 8 Henrietta Street, Covent Garden, W.C.2, 1926.

This book, which is supplemented by a review of some seventy-six original cases, is a well written and splendidly arranged volume. It is divided into six sections. The first is devoted to the anatomy of the mesenteric circulation and to the description of experimental studies in the anatomy. The second deals with etiology and classification. The third discusses pathology and morbid anatomy. The fourth discusses the clinical manifestations, the fifth diagnosis, and the sixth treatment and results.

While the anatomical studies are instructive, they do not appear to be of very great practical value in treatment. The sections on etiology, clinical symptomatology and treatment are clear and definite. It is difficult to see how spinal anæsthesia as suggested by the author could have a place in cases too collapsed for ether anæsthesia.

On the whole the volume is a valuable addition to medical literature. R. V. B. SHIER

Fundamentals of Dermatology. Alfred Schalek, M.D., Professor of Dermatology and Syphilology, University of Nebraska College of Medicine, etc. Price $3.00. 239 pages. Illustrated with 54 engravings. Lea & Febiger, Philadelphia and New York, 1926.

This small volume presents in condensed and readable form many of the salient facts in the domain of dermatology. It is a valuable reference work for medical students and general practitioners.

The student would do well to familiarize himself specifically with the chapter entitled "Dermatological Aphorisms," and heed the instructions contained therein. HUGH W. MACKAY

Practical Materia Medica and Prescription Writing. Oscar W. Bethea, M.D., Ph.G., F.C.S. Fourth revised edition. 478 pages, illustrated. Price $5.00 net. F. A. Davis Co., Philadelphia, 1926.

The author aims at combining a concise and yet complete materia medica with the teaching of prescription writing. The placing of these two objects together will be found convenient for the student and has much that is valuable to the practitioner. At the same time there is in this work a tendency to excess in details of description which hardly seems necessary even in the attempt to provide a "foolproof" guide to prescription writing.

We are glad to note that after discussing the use of Latin in prescription writing the author concludes that "as long as some use it, all must be familiar with it," but it is to be hoped that medical students will not consider the value of Latin to lie only in what it teaches them regarding the prescribing of drugs.

There is a fairly complete review of that thorny subject to the novice in prescribing, incompatibility, and the method of discussing problems in prescriptions by the method of question and answer is to be commended. H. E. MACDERMOT

International Clinics. Henry W. Cattell, A.M., M.D., Chas. H. Mayo, M.D., and 15 others. Vol. II, 36th series, 307 pages. J. B. Lippincott Co., Philadelphia, London and Montreal, 1926.

In this volume we note amongst other excellent papers one by Professor H. B. Cushing, Montreal, on "Laryngeal diphtheria," which is the second by him on this subject within the last two numbers of the *Clinics*. It is pointed out how much of the mortality from diphtheria is due to this particular form, and emphasis is laid on the value of preventive immunization in households exposed to diphtheria.

Professor Emile Sargent contributes a paper on the diagnosis and treatment of bronchial dilatation with some excellent x-ray illustrations of the lungs.

In surgery we note a study of cranial and intracranial injuries, by Dr. Guy W. Johnson, Montreal, based on a series of 154 consecutive cases admitted to the Montreal General Hospital in three years. He speaks of cisternal puncture being sometimes useful in this type of case but advises caution in its employment, and he also thinks that patients with this injury should be kept in bed for longer than is usual.

H. E. MACDERMOT

Approaching Motherhood. Questions and Answers of Maternity. George L. Brodhead, M.D., Visiting Obstetrician, Bellevue and Allied Hospitals, Harlem Division, New York City. 181 pages. McClelland & Stewart, Toronto, 1926.

Of the many pamphlets and books recently written for the young mother, perhaps none cover the field of maternity more clearly and yet more concisely than does this one by Dr. Brodhead. It includes not only answers to questions which mothers ought to know but also exposes the fallacy of many of the popular beliefs.

Starting with a brief outline of pelvic anatomy and physiology as a basis, the signs and duration of pregnancy are thoroughly discussed. The accidents and complications common to pregnancy are enumerated, and an especially useful chapter on details of hygiene and care during pregnancy, is listed. Such subjects as preparation for confinement, convalescence, nursing and care of the baby contain valuable and up-to-date information. ELEANOR PERCIVAL

Atlas of the History of Medicine. I. Anatomy. Dr. J. G. DeLint, 96 pages, 199 illustrations. Price 15/- net. H. K. Lewis & Co., 136 Gower Street, London, 1926.

It is a courageous teacher who advises the medical student of to-day to increase his already swollen list of books, and that this addition should consist of an Atlas of the History of Medicine would be a still further proof of that courage. And yet such an atlas may serve as a ripening influence which is not to be had from the mere accumulation of facts. Every one who teaches medicine will welcome a work which gives us a survey of our growth that serves not only to encourage, but also to instill humility. To the medical student engaged in mastering anatomy there may seem to be little if any time for looking back at the work of others, but it is just such books as these which help to stimulate interest in the history of our profession.

The book contains an introduction by Dr. Chas. Singer, in which he speaks with no uncertain note of the need to study history. "Many men of science," he says, "work habitually with the feeling that they are engaged in investigating something that is more fundamentally true and existent than all that has gone

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before them. They are seeking—and many of them believe that at times they are finding—the real causes of things. Their predecessors seem to them to have been steeped in error and frequently in something no better than superstition and folly.... It is not the first time in history that men have dreamed this dream.... What more definite, more positive, more sharply defined than the structure of the body? Yet this book tells of the ages that it has taken men to reach our current idea of how we are made. Who will be so bold as to say that the image that we now have has come to stay?''

As a history of medicine the book necessarily is incomplete, but when one has glanced through it there is left on the mind a connected picture of the stages through which the study of anatomy has passed, and an impression which is conveyed pleasantly and readily; for the explanatory notes are admirable and the highest praise is due to the quality of the reproductions. We look forward to further volumes in this history.

H. E. MACDERMOT

A Medical Formulary. E. Quin Thornton. 352 pages, twelfth edition, revised. Price $2.50. Lea & Febiger, S. Washington Square, Philadelphia, 1925.

A Treatise on Influenza. With special reference to the Pandemic of 1918. Rajendra Kumar Sen. Foreword by Dr. S. R. Harrison. Published by the author from Hurmutty Tea Estate. P. O. Laluk, North Lakhimpur, Assam, 1923.

Constitutional Medicine with especial reference to the **Three Constitutions** of Dr. Won Grauvogl. By John H. Clarke, M.D. Price 5/3. 180 pages. The Homeopathic Publishing Co., 12a, Warwick Lane, London, E.C.4, 1926.

International Clinics. Edited by Henry W. Cattell, A.M., M.D., and others. Vol. III, 36th series. Price $2.50 for one volume, $10.00 for the set of four. J. B. Lippincott Co., 201 Unity Bldg., Montreal, 1926.

The Surgical Clinics of North America. Vol. 6, No. 4. Chicago number. 1119 pages with illustrations. Philadelphia and London, W. B. Saunders Co. Canadian Agents: McAinsh & Co., 4 College St., Toronto, 1926.

We note in the Medical Formulary the many changes which it has had to make on account of the revision of the U.S. Pharmacopœia. These make this twelfth edition thoroughly complete and up to date. Perhaps a little more emphasis might have been laid on the *early* use of scarlet fever serum in treating the disease.

Dr. Harrison writes a foreword to Dr. Sen's treatise on influenza. The book shows a thorough acquaintance with influenza in all its forms, and gives some useful hints on treatment.

Dr. Clarke points out that there is no ground for conflict between various methods in medicine, ''it is not a matter of belief, it is one of knowledge.'' He refers to Grauvogl's achievement in showing that in prescribing for a patient his constitution often counts for more than his particular complaint, and with that we are content to agree.

This volume of the International Clinics contains the usual varied collection of papers. We note in particular a biographical sketch of the late Sir Clifford Allbutt by Sir Humphry Rolleston, who is so peculiarly fitted for the task. Dr. Hanford McKee, Montreal, also contributes a paper on blastomycosis of the cornea and there are papers dealing with liver function, our present knowledge of vitamines, the treatment of asthma, and a series dealing with medicine in Italy.

The Chicago number of the ''Surgical Clinics'' includes interesting papers by Dr. Arthur Dean Bevan, on surgery of the stomach, Drs. Kanavel and Koch, on pre-operative and post-operative care of patients, and several others by workers in Illinois medical schools and hospitals. A note of commendation is due to the publishers for the excellent quality of the illustrations.

H. E. MACDERMOT

The Inflammatory and Toxic Diseases of Bone. A text-book for senior students. R. Lawford Knaggs, M.C. (Cantab.) F.R.C.S. Consulting Surgeon to the Leeds General Infirmary, etc. Price 20s. net. 405 pages. With numerous photomicrographs by G. H. Rodman, M.D. John Wright & Sons Ltd., Bristol, 1926.

Readers of the *British Journal of Surgery* will be familiar with part of the contents of this excellent book. Mr. Knaggs has elaborated his Hunterian lectures into a volume of 400 pages which will be greatly appreciated by surgeons and, especially, by teachers of surgery.

Each chapter contains a synoptic review of the subject with which it deals, so that any attempt to condense them further would be futile. The style is lucidity itself and the illustrations are beautifully executed and well-chosen. Many difficulties are simplified as, for example, the differential diagnosis of syphilitic and tuberculous disease in bones and joints; and the similarities between osseous lesions due to syringomyelia and those usually described as Charcot's joints.

Acute osteomyelitis as it occurs in children and in adults is dealt with most fully. The chapter on arthritis deformans is successful in clearing much of the confusion which has grown up around that subject.

The bibliography is very complete and the identification of museum specimens by their catalogue numbers should be most helpful. A well prepared index completes the volume.

The book itself is attractively produced and quite up to the standard of the publishers of the *British Journal of Surgery.*

MALCOLM H. V. CAMERON

Surgery of Neoplastic Diseases. By Electrothermic Methods. George A. Wyeth, M.D., New York. Foreword, Howard A. Kelly, M.D., Baltimore. Price $7.50 net. 298 pages, 137 illustrations. Paul B. Hoeber, 67 East 59th St., New York, 1926.

This book of 287 pages deals with the treatment of neoplasms in accessible tissues by special adaptations of controlled high frequency electric currents. There are described as monopolar or Oudin current producing a dessicating effect on tissue; bipolar or D'Arsenval current producing a coagulating effect on tissue and the endotherm knife using the three element vacuum tube current and producing a cutting effect on tissue.

The author's conception of malignant processes is in agreement with Gye and Barnard and Blair Bell and his plan of operation in a given set of conditions is made accordingly. There are many radical attacks made on current conceptions of the relationship between primary and metastatic disease. Numerous case histories are given in convincing substantiation of the value of the author's technique and also of his theories. The work is by an enthusiast who has made out a good case for his method and has marshalled a supporting bibliography that compels respectful consideration. The foreword by Howard A. Kelly is an endorsation that will carry much weight.

The methods advocated are not for amateurs in the use of high frequency currents. The distinction between diathermy and endothermy is drawn and a strong plea made for study of the latter subject by surgeons whose present equipment includes only the scalpel, radium and x-rays.

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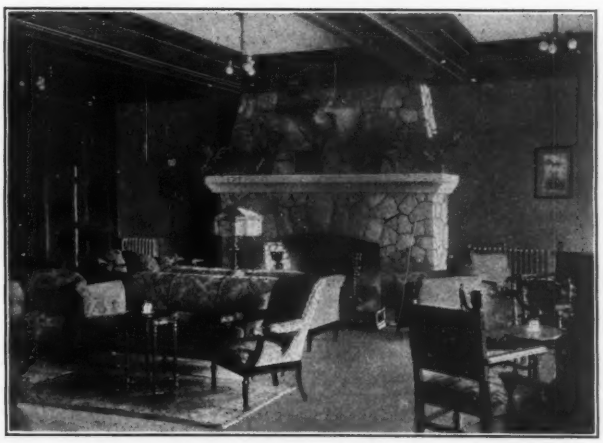

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The Surgical Clinics of North America. Lahey Clinic Number, New England Deaconess and New England Baptist Hospitals, Boston, Mass. Vol. VI. No. 3. 793 pages. W. B. Saunders Company, Philadelphia, London, and 4 College St., Toronto, June, 1926.

This is a volume of two hundred and fifteen pages well printed and well illustrated. It contains twenty instructive articles based upon work done in the Lahey Clinic in Boston. This work, as reported, gives the impression of thoroughness and originality. As might be expected, the subject of goitre is prominent in the table of contents. The article on the "Medical management of patients before operation for thyroidectomy" states the methods adopted by the authors. It is well-reasoned and very practical in its application. A scheme of management for gastric and duodenal ulcer cases is reported. It calls for the services of a skilled gastrologist. The quality of this service is indicated by an excellent study of end-results in pylorectomy. Every article is pleasantly presented and the book is well worth reading. As the subject matter was prepared in Boston, criticism of certain forms of expression may be considered gratuitous, but has that city established the use of the word "operate" as a transitive verb, or does it consider that "pathology" may indicate either a condition or a science? MALCOLM H. V. CAMERON

Clinical Pædiatrics. John Lovett Morse, A.M., M.D., Professor of Pædiatrics, Emeritus, Harvard Medical School, Consulting Physician at the Children's, Infants' and Floating Hospitals, Boston. 816 pages and index. Illustrated. Price $10.00. W. B. Saunders Company, London and Philadelphia and 4 College St., Toronto, 1926.

The object of this work is clearly given in the opening sentences of the preface. Dr. Morse states, "This book was written primarily for my own amusement, not with the idea of enlightening the world or of adding anything to the sum of human knowledge. I hope, nevertheless, that it may be interesting and instructive to both students and general practitioners." A very didactic style is maintained throughout the work, particularly in the discussion of infant feeding and in the application of clinical pædiatrics and the discussion of various forms of disease in childhood, Dr. Morse expressing his differences of opinion with other authorities quite clearly and pointedly. The whole book is in the nature of a monograph on pædiatrics. It is well divided as regards its subject matter, but scantily illustrated, and the style, though perhaps more forcible, is less readable than recent text-books of the British school, such as Still or Thompson. Birth injuries and diseases of the newborn are well described. There is an unusually lengthy discussion, for a modern text-book, of stools and their characteristics. The problem of the feeding of the newly born and the modification of breast milk are presented. Dr. Morse does not accept *in toto* the so-called caloric systems of infant feeding, and various food formulæ are discussed under percentage composition of their various food components. The use of acidified milks as a food for well babies is discussed and disapproved, as is also the use of concentrated food mixtures. Lactose is the sugar of choice rather than the more readily absorbed dextrose-maltose mixtures or cane sugar.

The sections on diseases of the nervous systems and on the glands of internal secretion are very interesting and adequately illustrated. Acute and chronic infections, arthritis, glandular fever, acrodynia, chrondrodystrophy fetalis and osteogenesis imperfecta are discussed in the chapter on unclassified diseases.

As Dr. Morse states in his preface "the space given to the various diseases is not commensurate with their relative importance." This very fact, while not detracting from the value of the book itself, does not enhance its value as a text-book for students. R. R. STRUTHERS

The Duodenal Tube and Its Possibilities. Max Einhorn, M.D. 197 pages and index. Illustrated. Second edition. F. A. Davis & Co., Publishers, Philadelphia, 1926.

This edition is written in a very careful and methodical manner. One may not agree with the author as to all the possibilities of the tube, but he has gone into sufficient details to enable the new comer to pick up all the essentials of technique.

The book is divided into six chapters. The first is an historical sketch of the development of the duodenal tube, and a description of the instruments used for obtaining duodenal contents, *i.e.*, the duodenal bucket, the aspirating duodenal catheter, and the duodenal pump.

In the second chapter the various tests for duodenal contents including pancreatic ferments, rennet ferment and the fractional examination of the duodenal contents are given in detail. Their physiological appearance and qualities are likewise stated.

The third chapter takes up the diagnostic import of the duodenal tube in diseases of the stomach and pylorus, the duodenum, the pancreas, liver, gall bladder and biliary ducts. These are set down in detail and the section is profusely illustrated with cuts showing exactly what the tube contents should show in each given case.

In chapter four we find listed the therapeutic uses of the duodenal tube. These vary from gastric lavage to substitution for the Murphy rectal drip.

The fifth chapter tabulates a list of the newer instruments for the pylorus, duodenum and small intestine, and the last chapter discusses their practical uses. One wonders just whether they can actually do all the things placed to their credit.

In conclusion one would say that the book is typical of an enthusiast in a rather limited field, and we hesitate to think it advisable to entirely forsake the old fashioned Ewald test meal and the information obtained thereby. L. C. MONTGOMERY

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